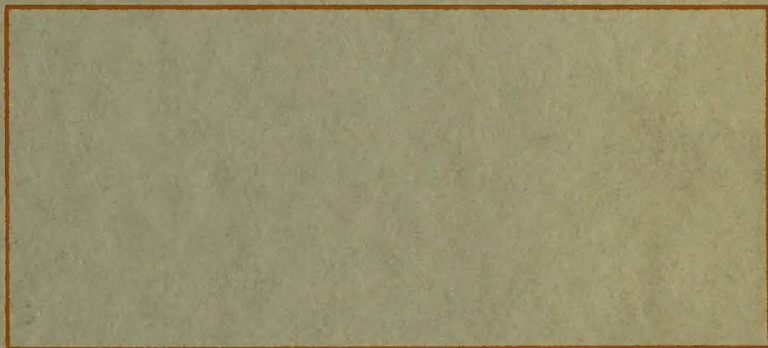


# CORNELL ROLLING DOORS

ESTABLISHED 1846



LONG ISLAND CITY, N. Y.







# CORNELL

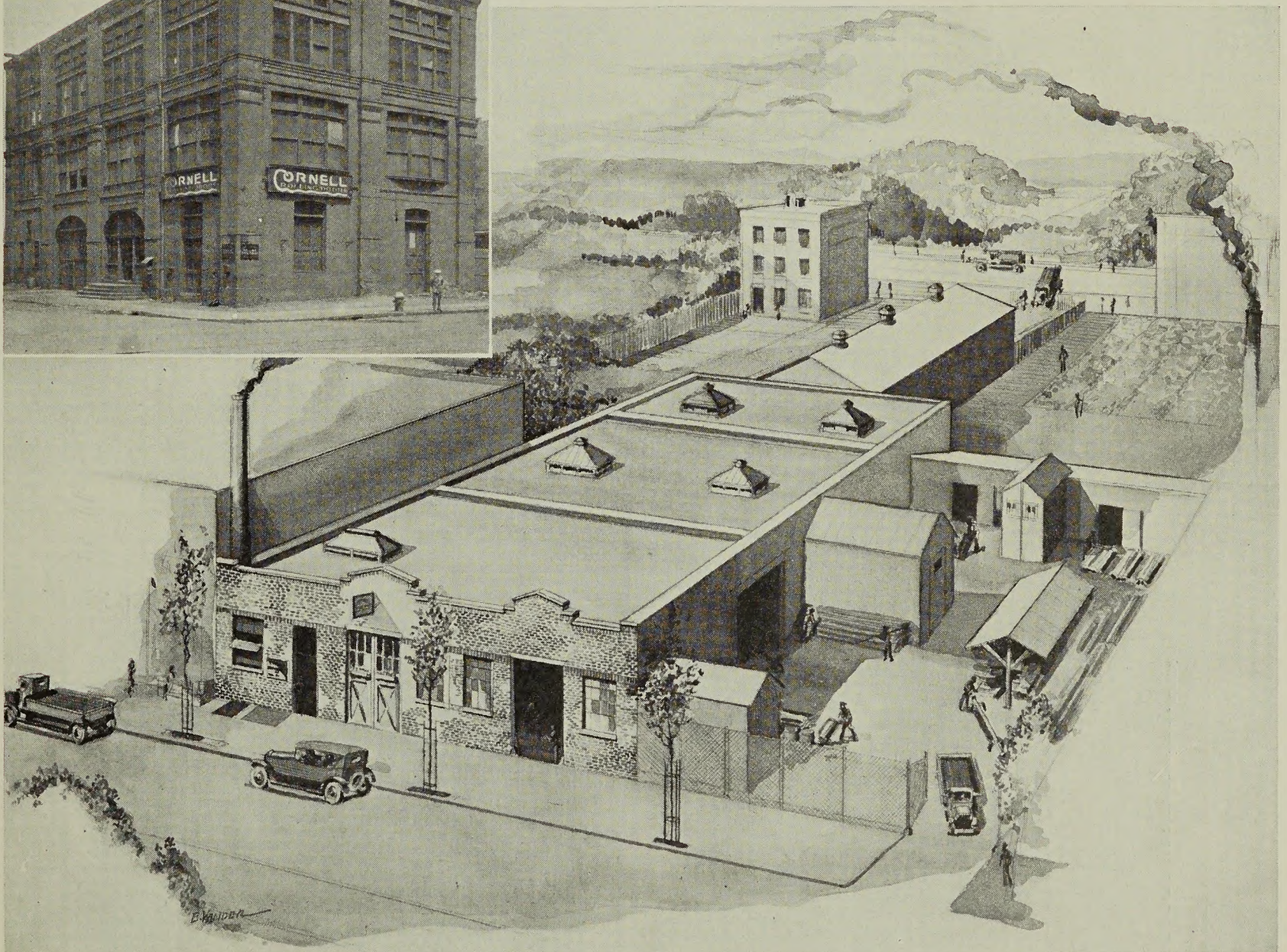
## ROLLING DOORS

ESTABLISHED 1846

Steel Rolling Shutters and Doors; Underwriters Labeled  
Rolling Fire Doors and Shutters



New York City Branch  
Cornell Building  
26th St. & 11th Ave.  
N. Y. C.



### Main Office and Plant

36-20 13th St. (Marion St.) — 36-15 12th St. (Sherman St.)

Long Island City, N. Y.

Cable Address—Llenroc

Copyright, 1926, by Cornell Iron Works, Inc., Long Island City, N. Y.



# HISTORY

## CORNELL IRON WORKS, INC.

*Established 1846 by John Black Cornell and William W. Cornell*

*Pioneers in the manufacture of hinged slat rolling steel doors*

**W**E realize that age alone is not the most accurate criterion of excellence. Experience is only the best teacher if the lessons are promptly acted upon to produce improvement.

During eighty odd years of manufacturing Cornell Iron Works has discarded many designs, and much equipment, in favor of better methods and machinery. This progress toward perfection we mean to continue.

The first of the family to start in the iron business was George Cornell of New York, who took over his employer's organization in 1828 to try his fortune as a manufacturer and erector of iron work. In 1846 his two younger brothers started for themselves, in a similar line, as J. B. & W. W. Cornell.

John B. Cornell, the grandfather of the pres-

ent President and Vice-President of Cornell Iron Works, was a pioneer in the manufacture of hinged slat rolling steel doors, taking out one of the earliest patents in this art in 1854. Many of his installations are still in operation after seventy years of service.

Cornell Iron Works, Inc., recently moved their main office and shops to their new and modern plant in Long Island City, New York, after forty years at 26th Street and 11th Avenue, New York City.

The high ideals and traditions of the founders are carried on by the present organization. Cornell Rolling Steel Doors are scientifically designed, accurately manufactured, painstakingly inspected and tested. We recommend them to all users who appreciate fine work.

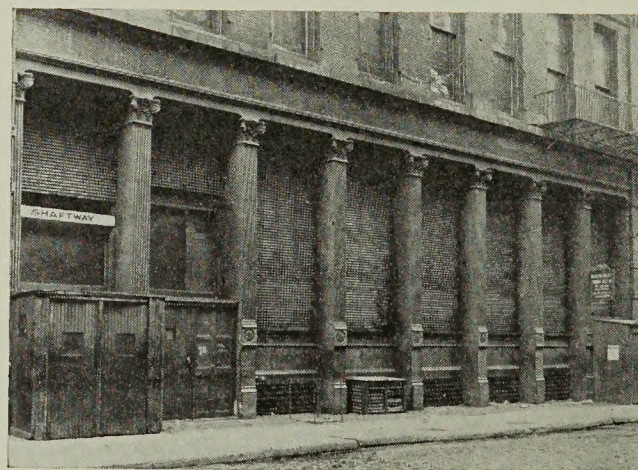
MILTON LONGACRE CORNELL, C.E.,  
*President and Treasurer.*

JOHN BLACK CORNELL, Ph.B.,  
*Vice-President and Secretary.*

JOHN M. CORNELL, Auditor  
*Formerly Pres. J. B. & J. M. Cornell Co.*



Steinway & Sons, N. Y. C.  
CORNELL doors after 57  
years of service.



H. B. Claflin & Co., N. Y. C.  
CORNELL doors after 41  
years of service.



## General Description

Cornell Rolling Steel Doors roll up out of the way overhead. They eliminate waste floor space. They operate very easily in the largest sizes. They are weather proof, burglar proof and fire-proof.

The Cornell Door proper is built up of a series of interlocking, cold rolled, mouldings, called slats. It is stiff against pressure, but flexible to roll up.

The door is retained at the sides in heavy, channel shaped, guides.

The flexible Cornell door rolls up on an overhead steel pipe roller, called the shaft.

The shaft is supported at each end in a steel bracket which contains the bearings. The steel brackets are fastened to the heavy steel side guides.

The overhead shaft roller contains one or more high grade springs. The springs are accurately designed to counterbalance the door at any point in its travel.

Small Cornell Doors are made to push up and pull down by handles on the bottom. This is called the self coiling type.

Larger Cornell Doors are furnished with geared operating brackets. The gears furnish the leverage to wind and unwind the pipe roller shaft, which raises and lowers the door.

The operating gears are turned by a sprocket wheel and an endless hand chain which reaches to the floor. This is called the chain gear type.

The gears may be turned by a vertical shaft leading to a hand crank attachment near the floor.

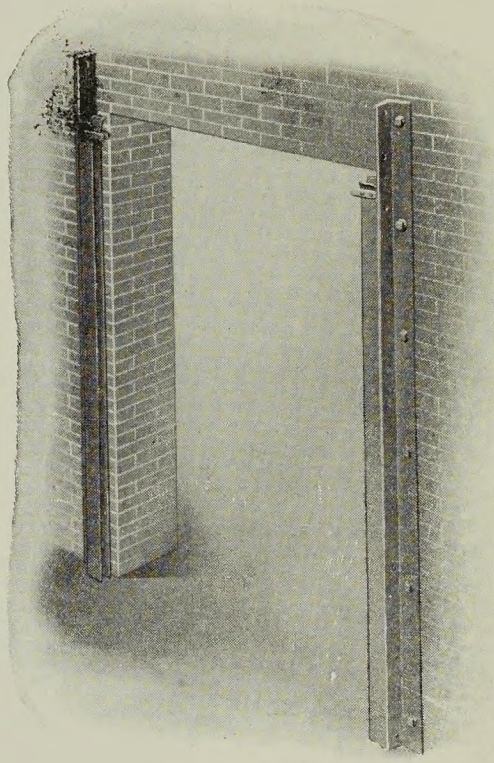
Very large Cornell Doors may be rapidly and economically operated by electric motors.

Cornell Rolling Doors are made to order to fit the individual opening.

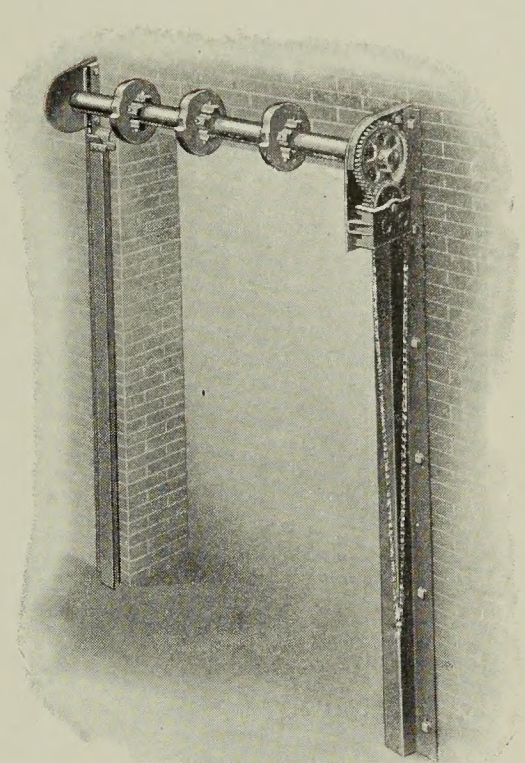
Cornell Rolling Doors can be used for practically any opening. The following pages show a number of types of Cornell doors and illustrate typical installations.

Consult our Engineering Department for layouts of special openings.

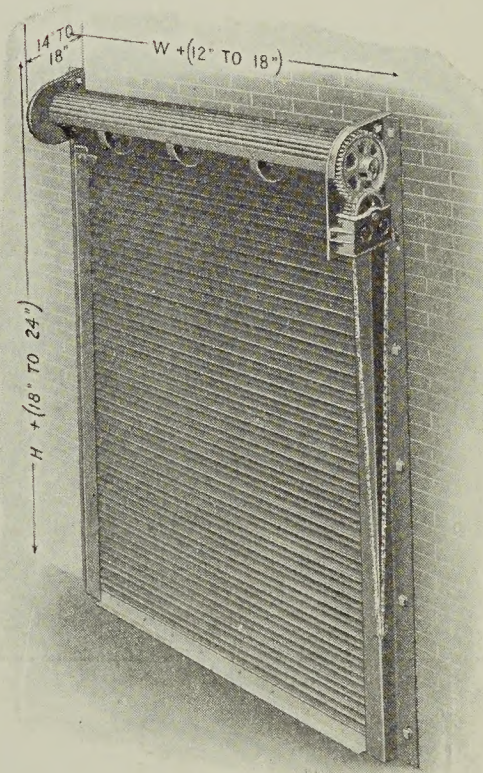
For doors exposed to severe weather conditions use Cornell patented non-corrodible curtain bottoms. This construction more than doubles the life of the installation. Write for special circular.



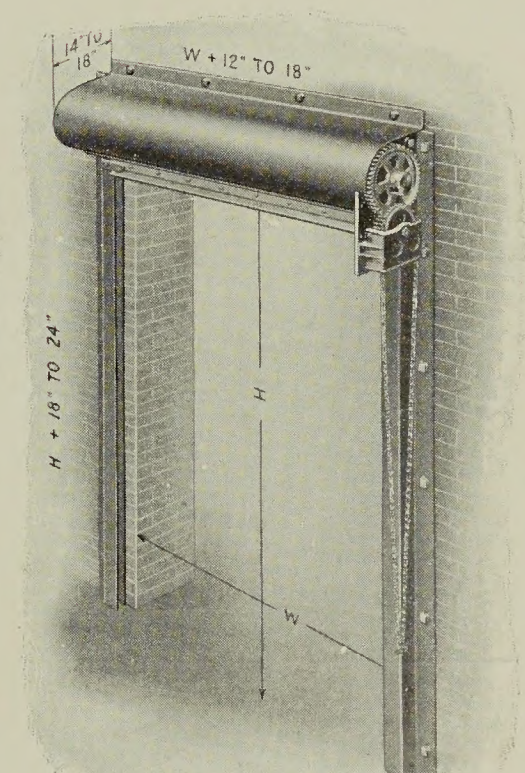
Channel shaped guides in place.



Steel brackets attached, supporting the shaft.

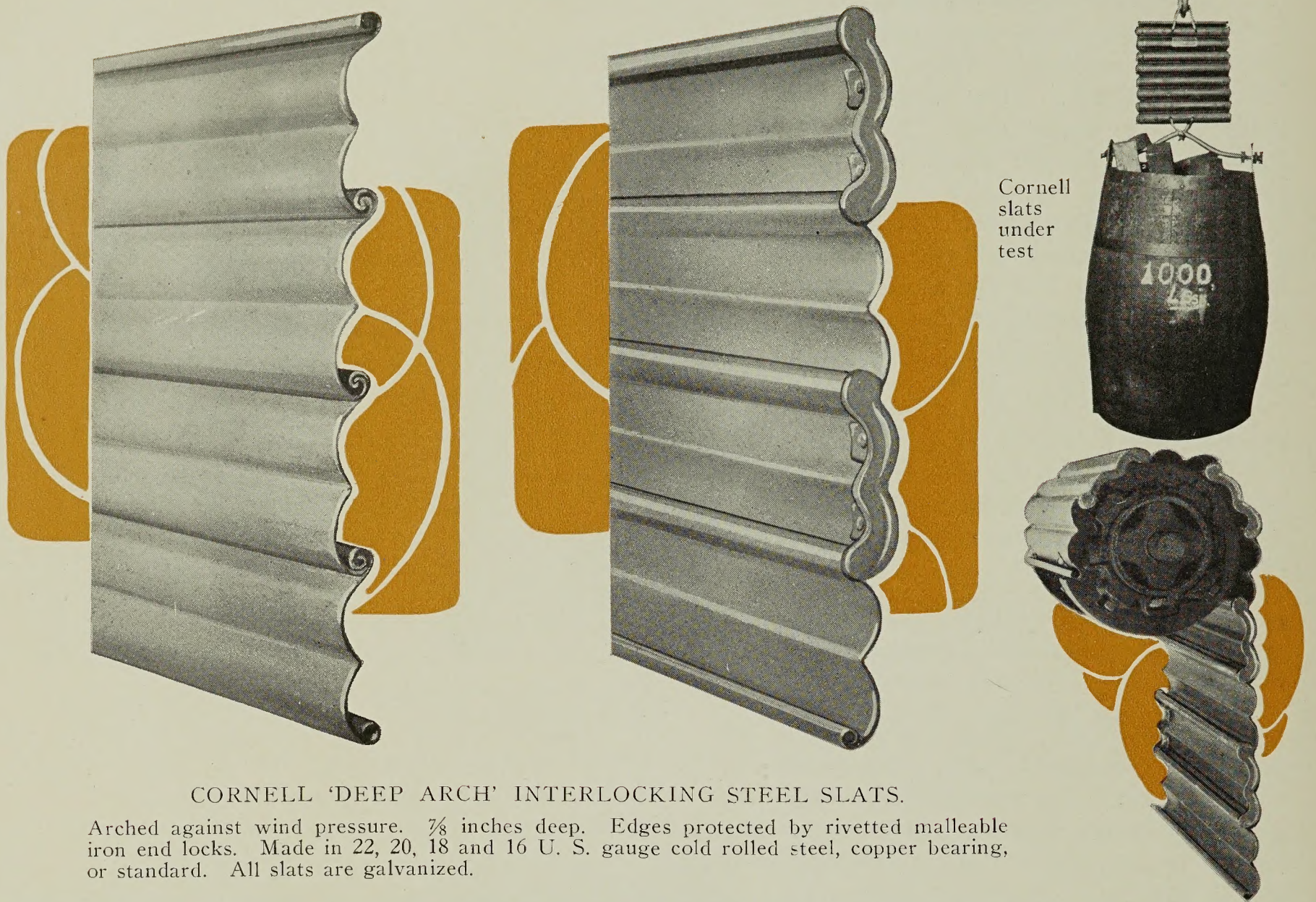


Steel curtain in place.



Curtain rolled up, with hood in place.

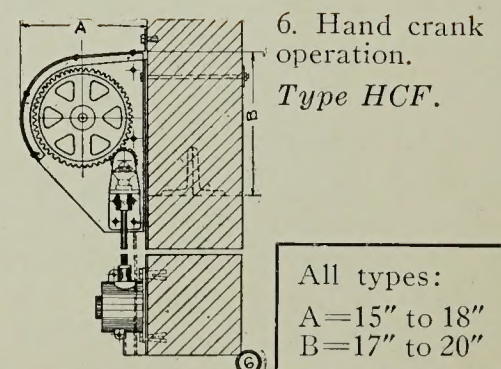
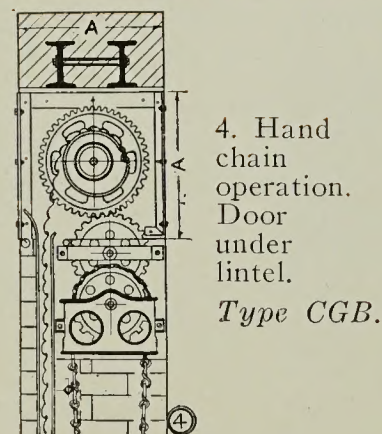
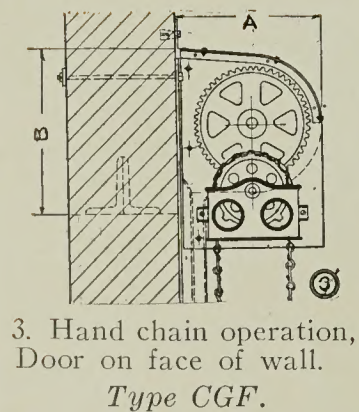
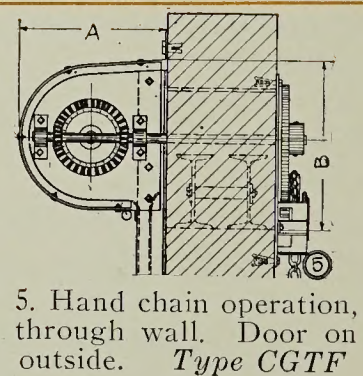
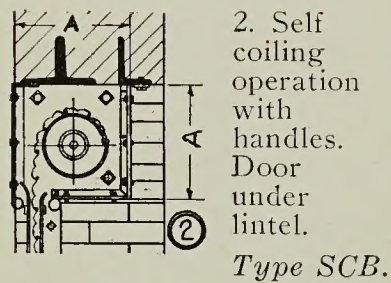
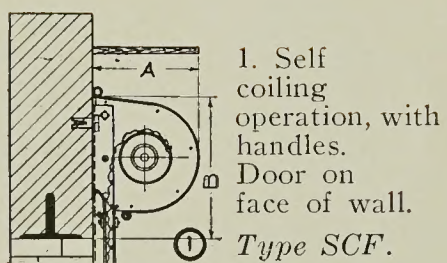




**CORNELL 'DEEP ARCH' INTERLOCKING STEEL SLATS.**

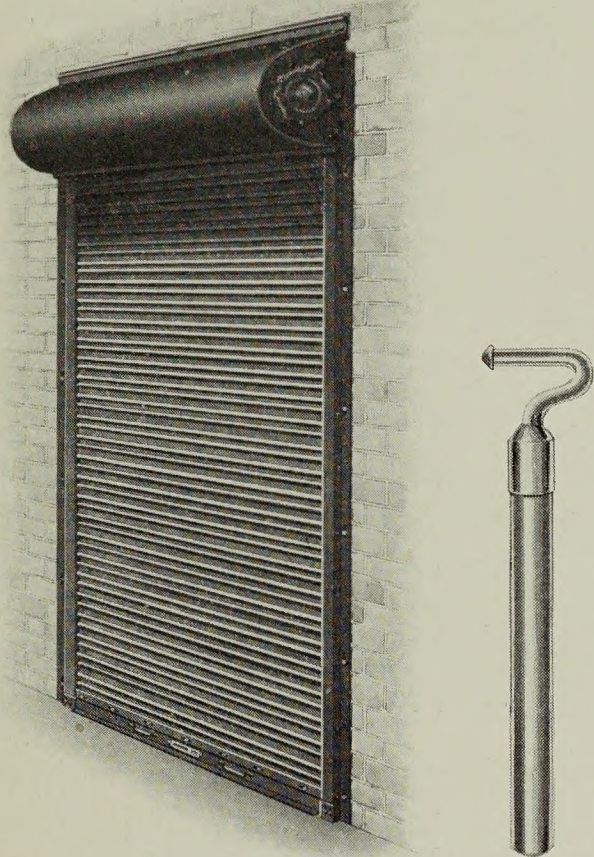
Arched against wind pressure.  $\frac{7}{8}$  inches deep. Edges protected by rivetted malleable iron end locks. Made in 22, 20, 18 and 16 U. S. gauge cold rolled steel, copper bearing, or standard. All slats are galvanized.

**Types of Cornell Commercial Service Doors**



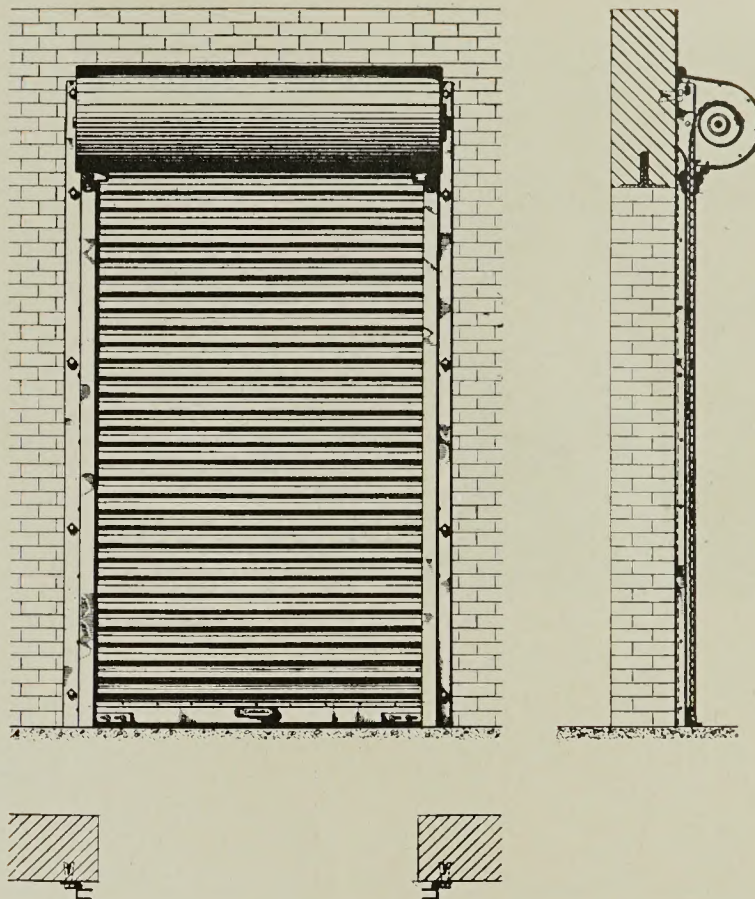
All types:  
A=15" to 18"  
B=17" to 20"





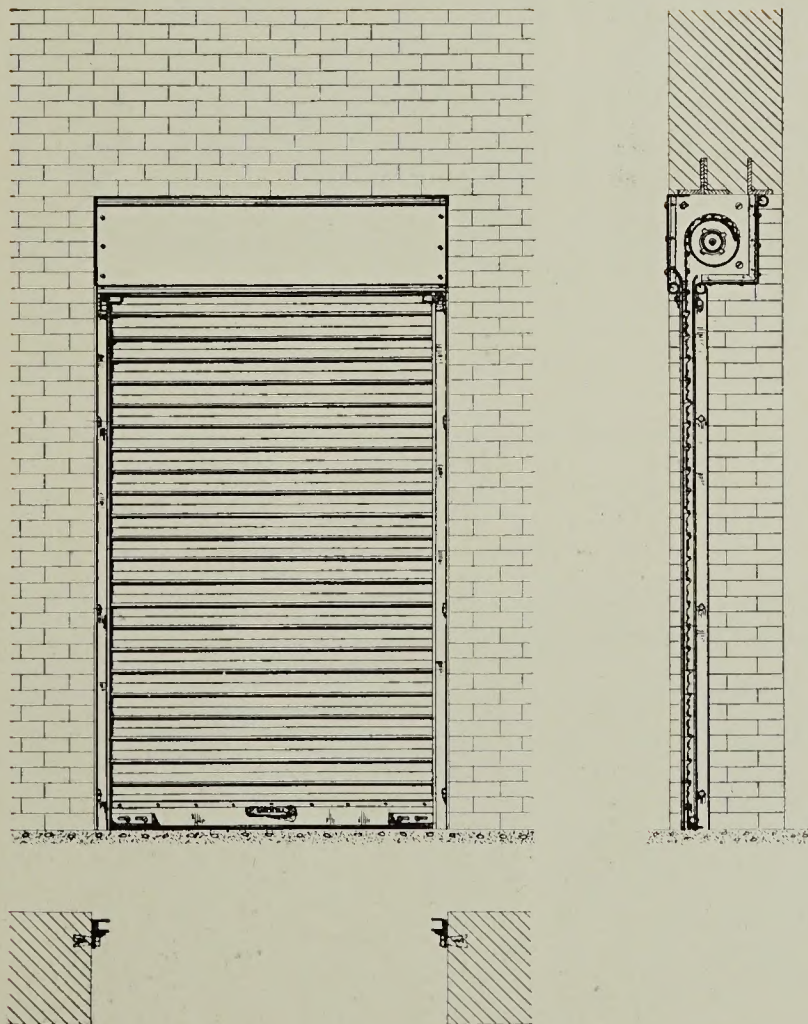
**PUSH UP, OR SELF COILING, TYPE.**

Pulls down with a pole, when over seven feet high. Located on face of wall. Perspective view.



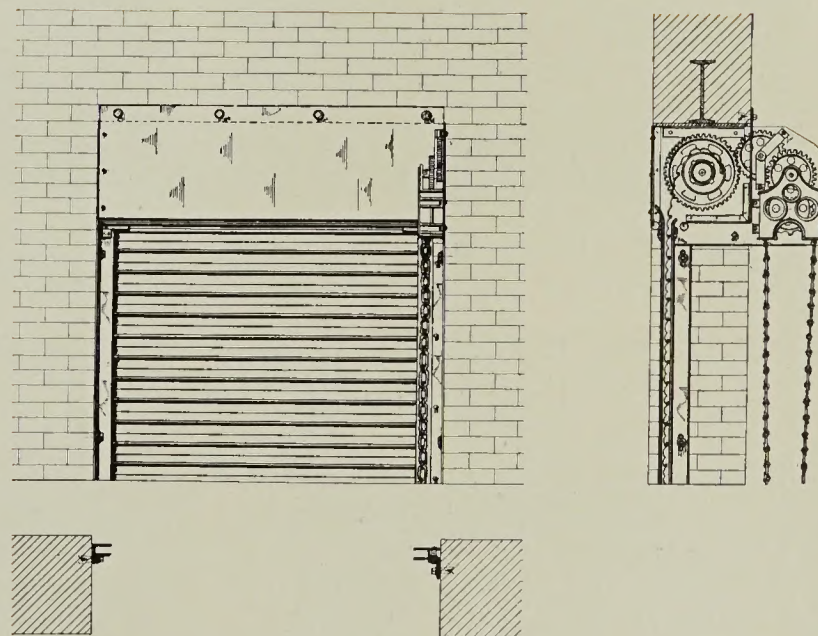
**TYPE SCF.**

Self Coiling, Face of wall location. Operated by one or more handles on the bottom and locked by bottom sliding bolts.



**TYPE SCB.**

Self Coiling, Between jambs location.

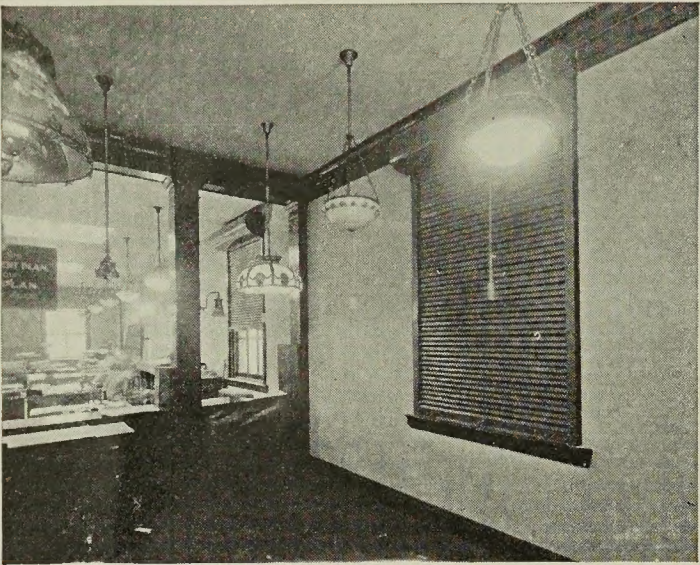


**TYPE CGB.**

Chain-Geared Operation. Between jambs location.

The hand chain revolves the overhead shaft, through the sprocket and gears, to raise or lower the door.

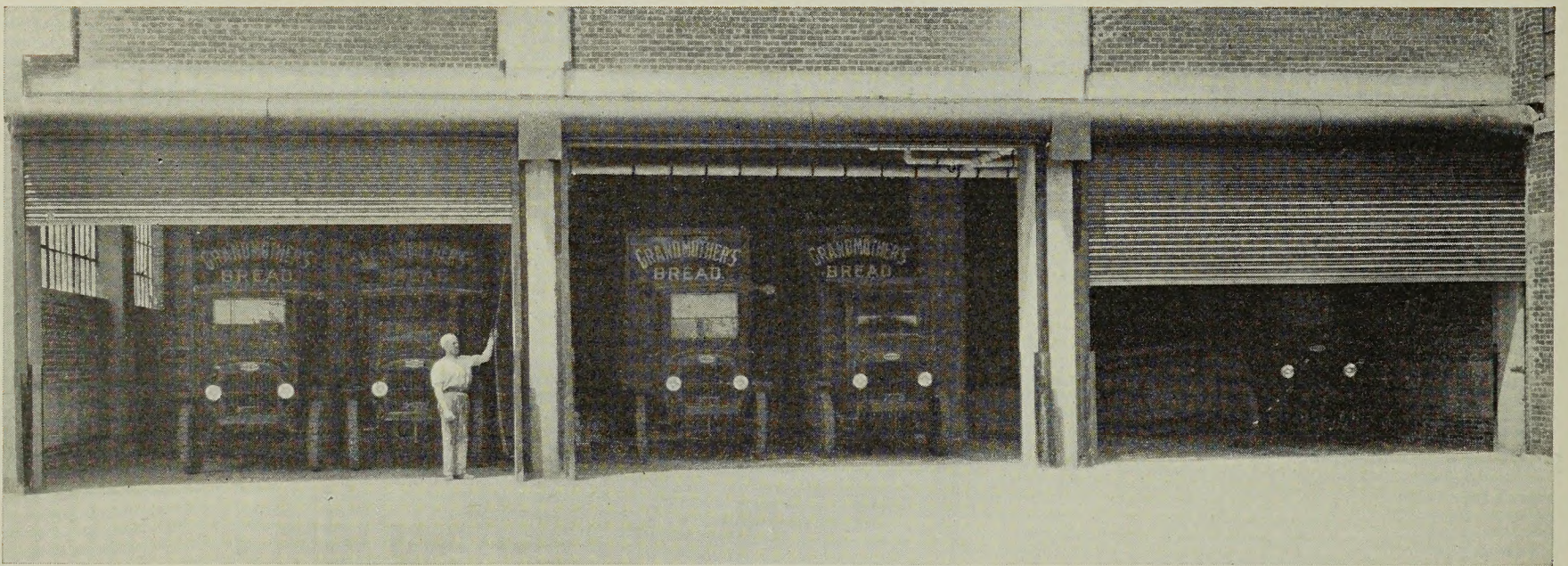




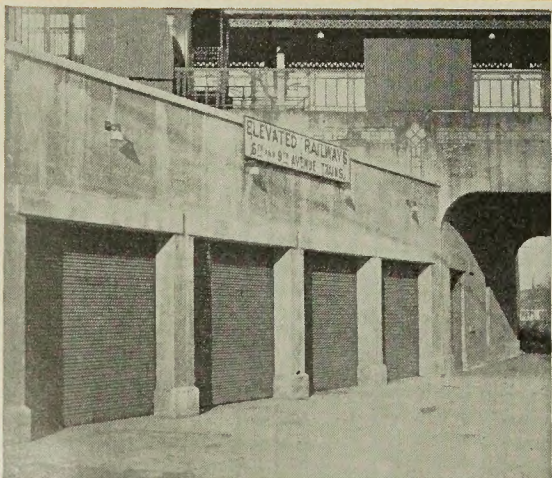
Window shutters, Consolidated Gas Co., N. Y. C.



Rolling shutter protecting jewelry window, Broadway, N. Y. C.



Garage doors in the Atlantic & Pacific Co. building, New Haven, Conn.

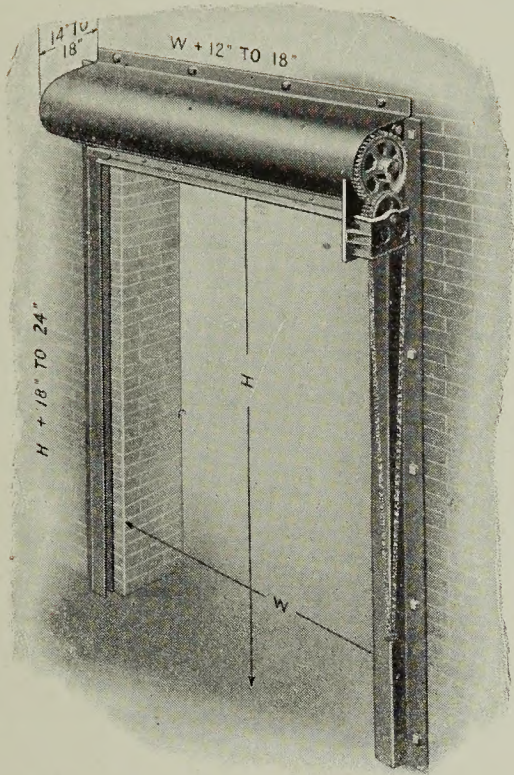


Interboro Rapid Transit Co., N. Y. C.



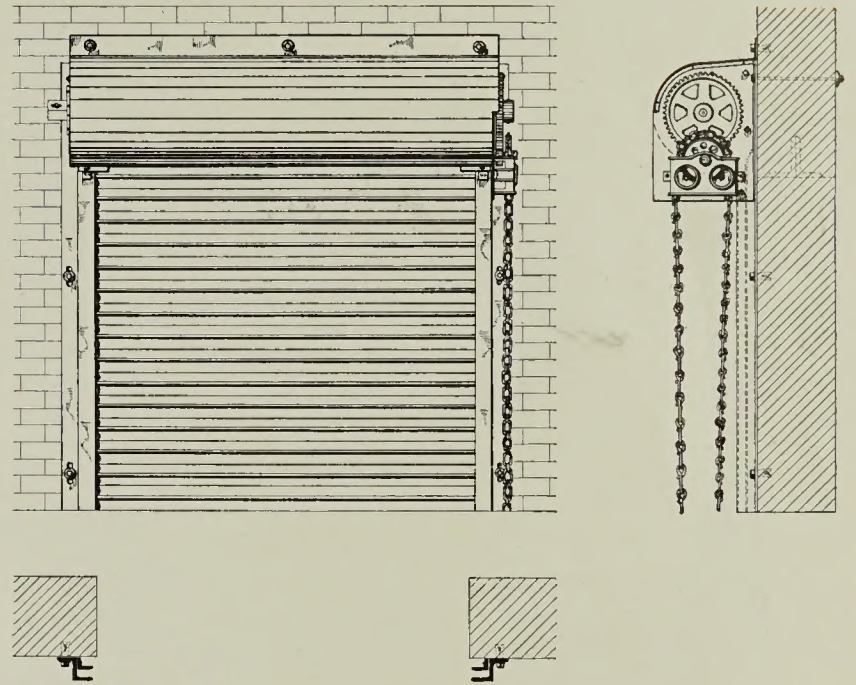
Warehouse doors, Jacksonville, Florida.





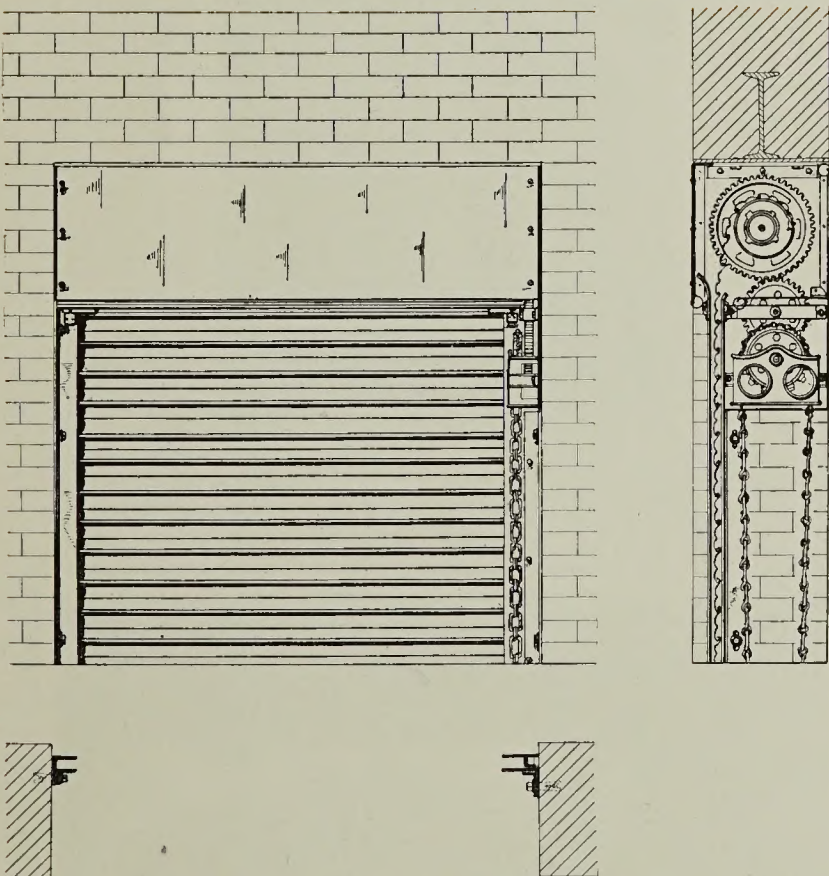
PERSPECTIVE VIEW OF TYPE CGF.

The hand chain revolves the shaft in either direction to raise or lower the door.



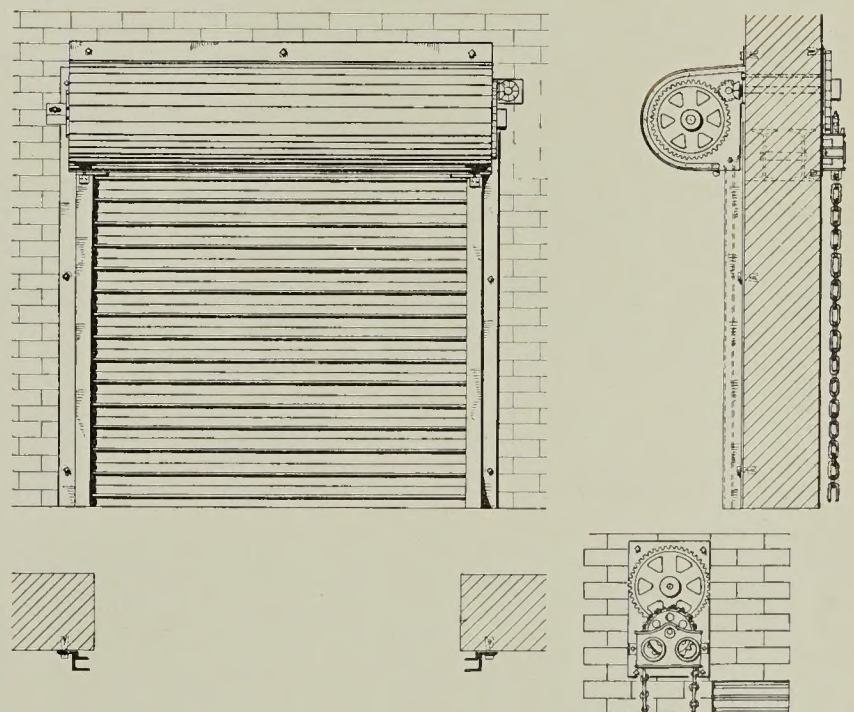
TYPE CGF.

Chain Gear operation. Face of wall location.



TYPE CGB (vertical gearing).

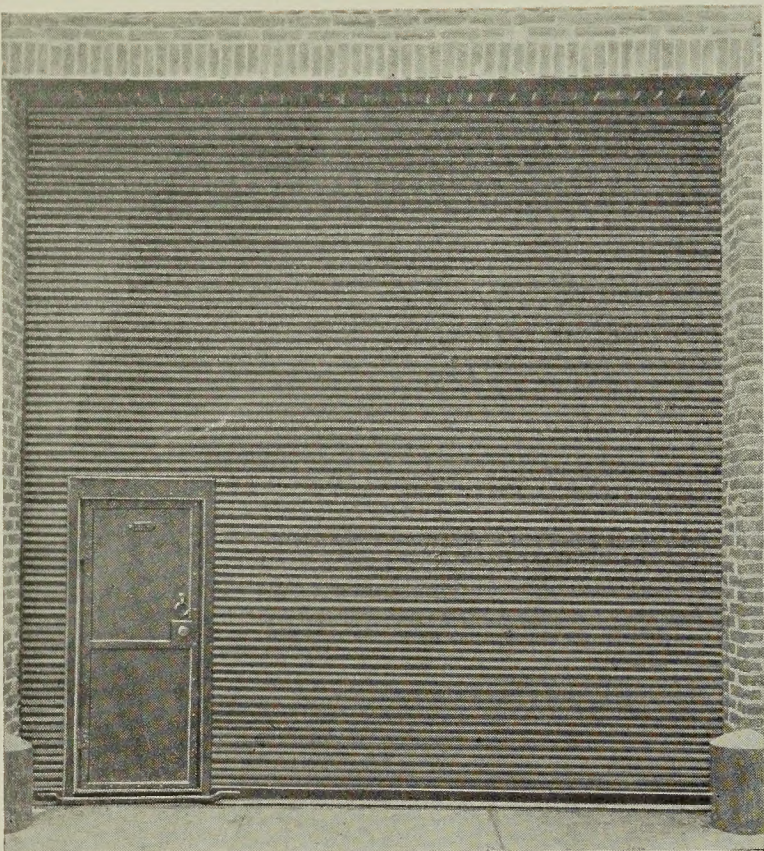
Similar to Type CGB, except for the location of the actuating chain sprocket and gearing.



TYPE CGTF.

Chain and Gear operation. Face of wall location. Through shaft to operate an outside door from inside the building, and vice versa.

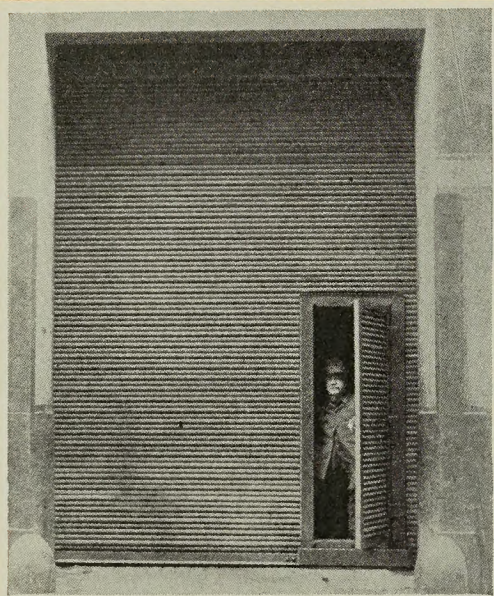




Rolling steel door with wicket door, closed.



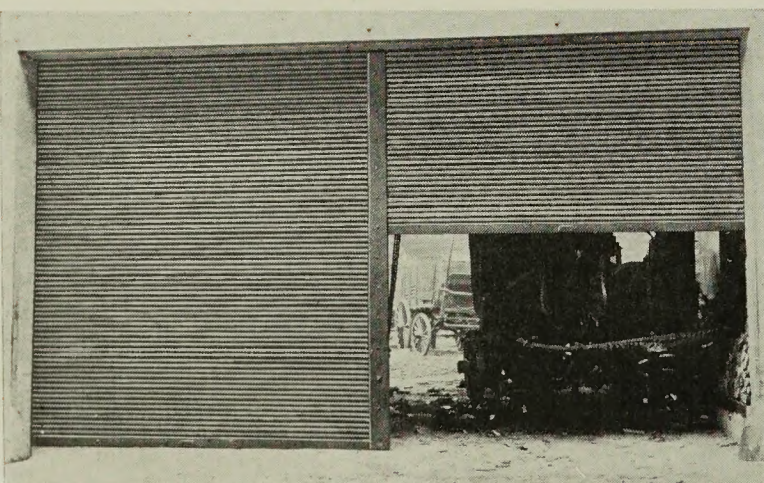
Rolling door part open. Wicket door and frame swung in.



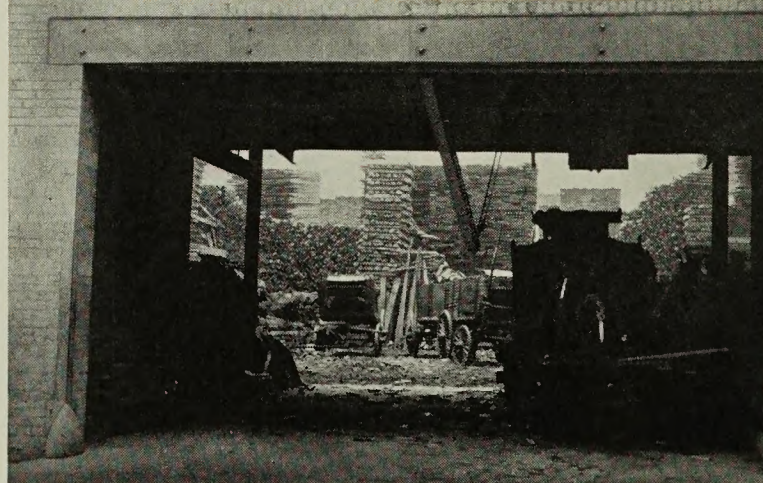
Architects Bldg., 101 Park Ave., N. Y. C.



U. S. Navy Dept., Pearl Harbor, Hawaii.

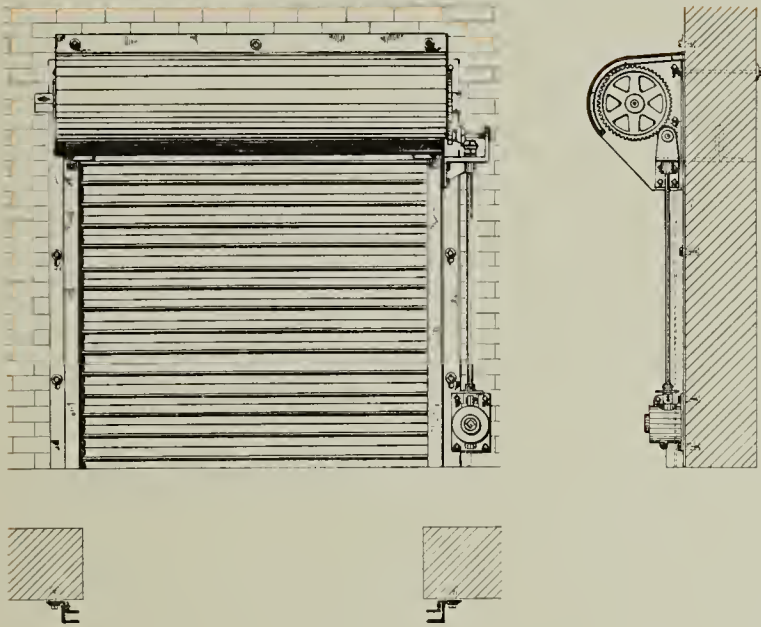


Wood yard, N. Y. C. Two doors with swing post.



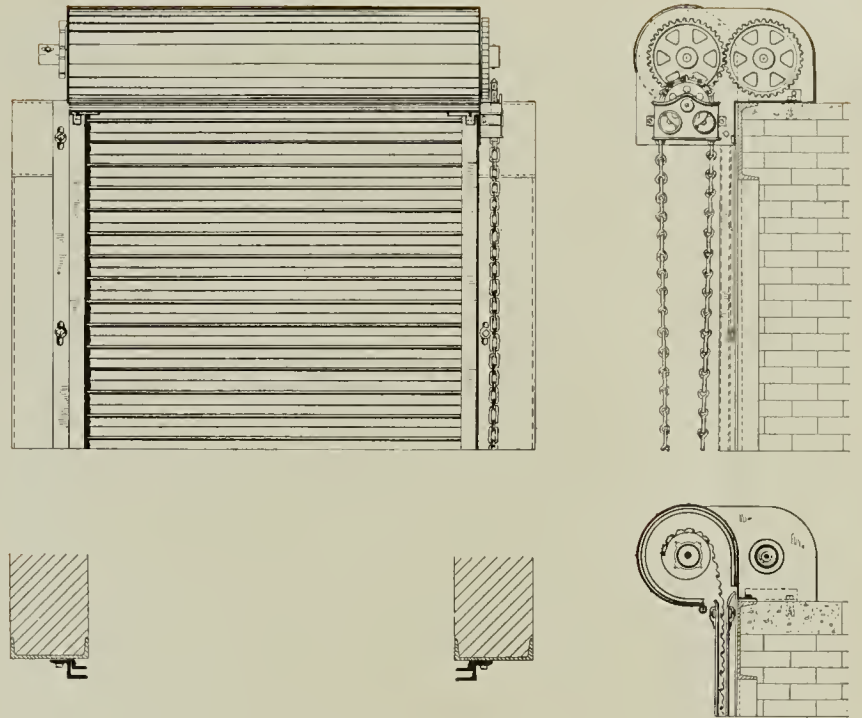
Center mullion swung up, giving clear opening.





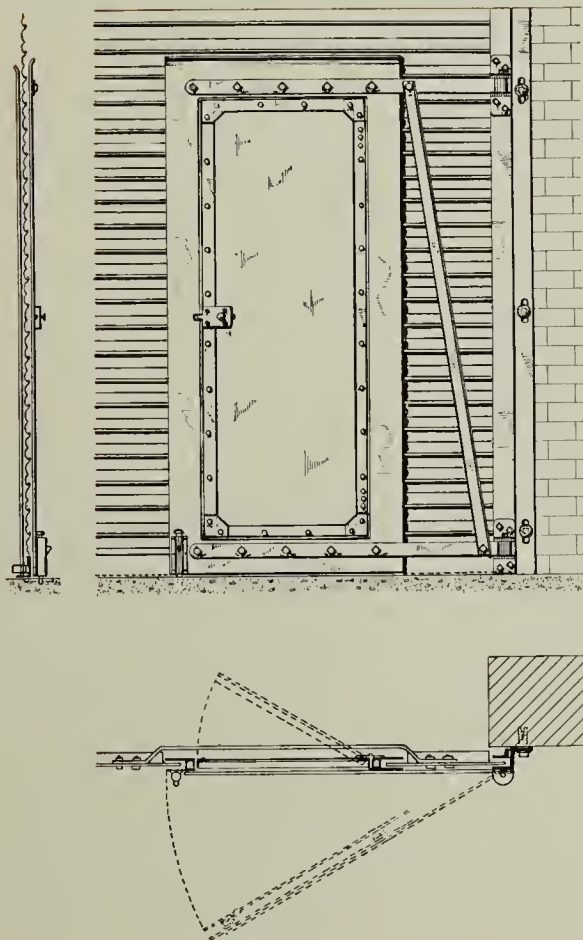
TYPE HCF.

Hand Crank operation. Face of wall location. The hand crank replaces the hand chain in this type.



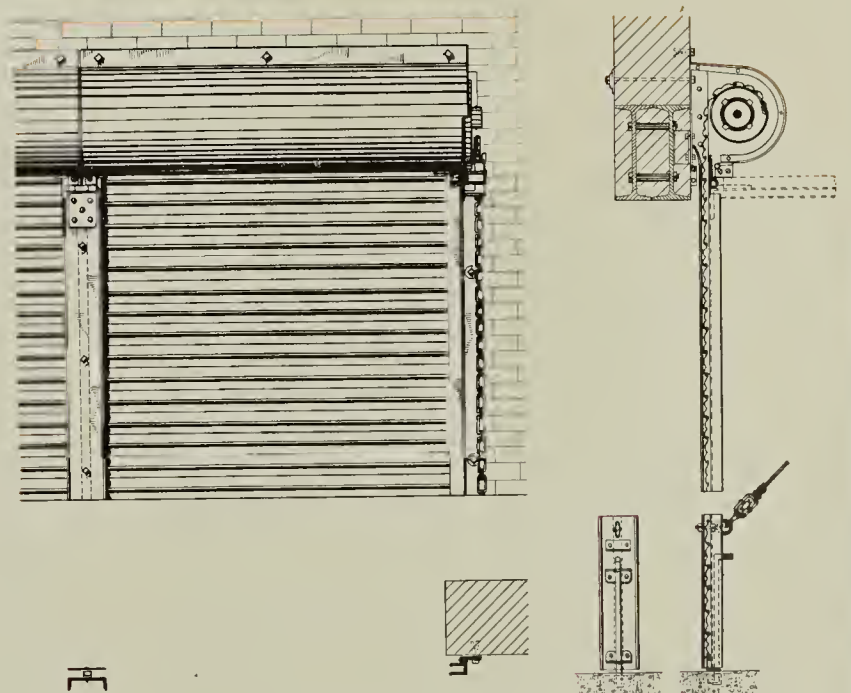
CORE OVEN DOOR.

Made with a supplementary shaft completely insulated to protect the spring. Continuous end locks limit the passage of air around the curtain edges.



WICKET DOOR.

Used in large doors for the convenience of quick entrance and exit. When the rolling door is raised the wicket frame is swung clear. See opposite page.



MOVABLE POST.

Used to divide large doorways into two or more units. When the rolling doors are up the posts can be swung out of the way, or run on trolleys, giving the maximum opening.



## Cornell Motor Driven Doors

Since the development of reliable electrical equipment, and the universal installation of electrical power, Cornell motor driven rolling doors have proved increasingly popular. While the first cost is considerably higher than hand operation, the ultimate economy is great. A few cents a day, for current, results in many minutes saved for labor, waiting automobiles, locomotives and cars. In severe weather the quick opening and closing of doors proves of prime importance.

Cornell electric driven units are the result of exhaustive experiment and long experience. Made in the Cornell factory they are carefully tested before shipment. The material is the highest grade obtainable and the workmanship is painstaking and accurate.

### Specification for Cornell Motor Operator M-2

*Motor*—General Electric 1, 2, or larger, hp., voltage and current to suit.

*Starter*—General Electric, magnetic switch, automatic starter, enclosed, with protective plugs.

*Switch*—Double throw, enclosed, safety, reversing switch, as manufactured by the Trumbull Electric Mfg. Co.

*Brake*—Cutler-Hammer, actuating solenoid magnet. Cornell brake shoes, arms and brake pulley.

*Limit Switch*—Screw type, enclosed, automatically cuts off current when door reaches top, or bottom, of its travel.

*Gears*—All cut gears, keyed to shafts, idler pinion micarta noiseless, motor pinion of cut steel. Worm wheel of cast iron, worm of steel, enclosed in dustproof box, running in oil, with ball thrust bearings either end of worm.

Emergency hand chain operation furnished, in case of failure of electric current.

*Bearings*—Heavy load bearings bronze bushed, lighter load bearings babitted. Inaccessible bearings oilless type, bronze and graphite, or fitted with grease-gun connections.

### Operation of M-2 Cornell Motor Operator

On throwing the knife switch, the solenoid acts to open the brake and the door moves up or down, as the case may be, at a rate of approximately 1 ft. per second.

On reaching the top or bottom of the door travel, the limit switch operates, automatically cutting off the current, stops the motor, cuts out the brake magnet and lets the brake go on with full power, locking the entire mechanism against further travel.

The action is foolproof.

Door may be stopped at any point in its travel, by simply throwing the switch. This operation automatically puts on the brake, and the door stops promptly.

Push button control can be furnished, with one or more stations, at an extra cost.

### Cornell Motor Operator M-3

This is a heavy duty unit suitable for the largest doors made. The principle is identical with M-2.

The bracket is made with a double diaphragm, rigidly latticed. All gears are cut spurs, and have wide faces. On very large doors, for heavy duty, the train of spur gears will deliver power with much less loss than a worm reduction.

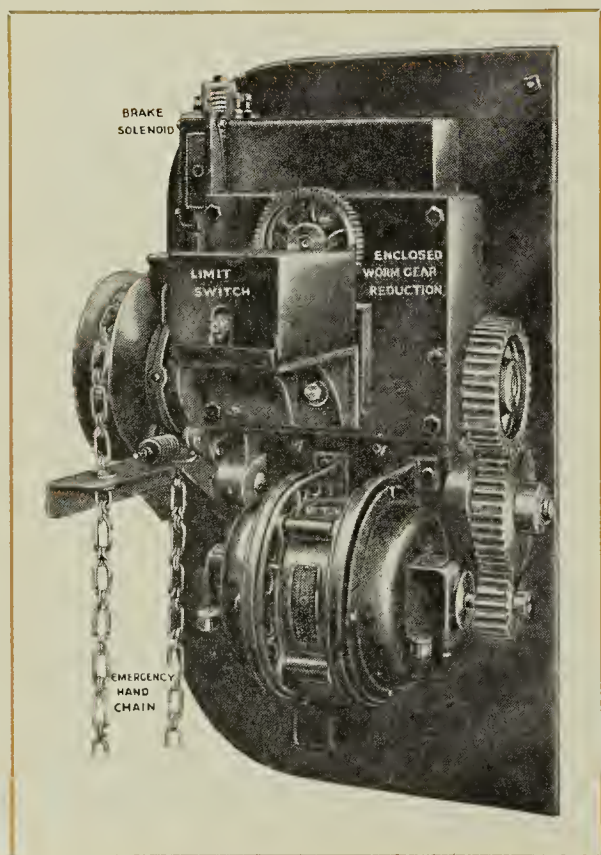
#### *Railroad Entrances*

--Cornell motor driven doors, 16 to 17 ft. wide, by 22 ft. high, give excellent service.

#### *Garages and Ramps*

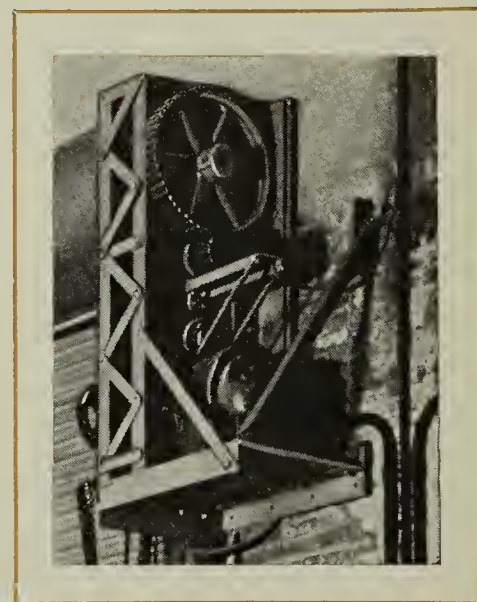
--Cornell motor driven doors, with push button controls, are very popular. One set of controls may be located in the garage office for maximum convenience.

*Craneways* — Three Cornell motor driven doors are usually employed. The swing posts, or mullions, are raised and lowered by a separate motor.



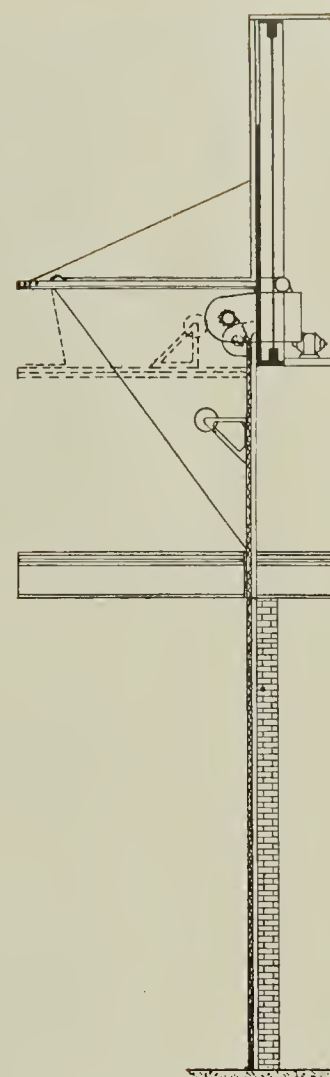
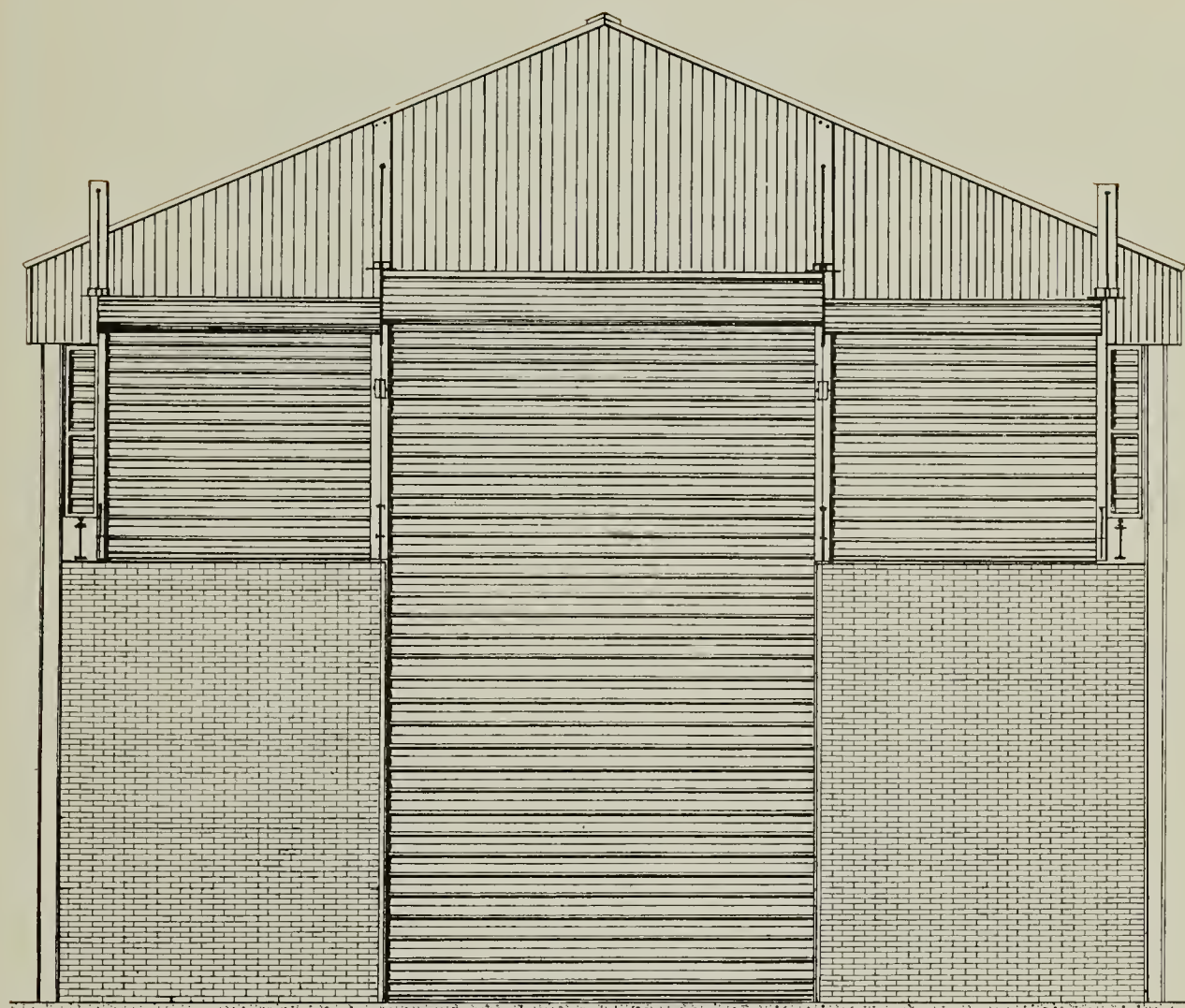
CORNELL STANDARD MOTOR  
OPERATOR M-2.

Note neat and compact drive mounted on an unbreakable heavy steel bracket.



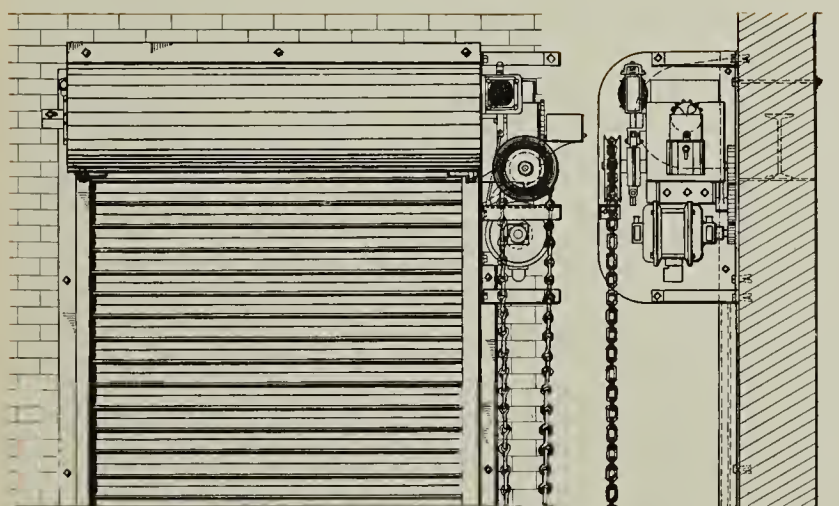
Cornell heavy duty motor  
operator with 7½ hp.  
motor M-3.



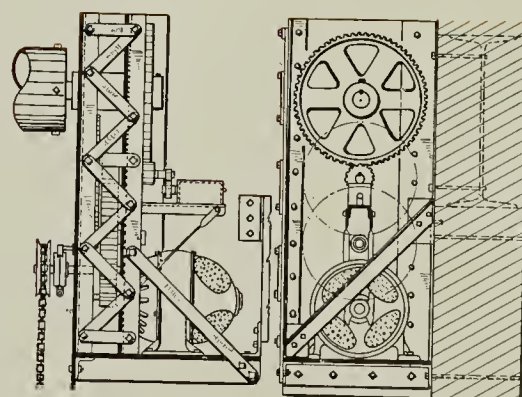


### CRANEWAY DOORS.

Electric motor operation raises the doors and swings up the intermediate posts, giving a clear craneway. The operation is protected by automatic limit switches. The control may be on the crane or at ground level. Doors may be placed inside or outside the building. Our engineering department should be consulted on the design of supports.



Electric Motor operator M-2 applied to door on the face of wall.



Electric Motor operator M-3 for heavy duty.



Standard reversing switch control.





Pennsylvania R. R. freight house doors, Columbus, Ohio.



Florida East Coast R. R. freight house doors, West Palm Beach, Fla.



Phila. & Reading R. R., Trenton, N. J.

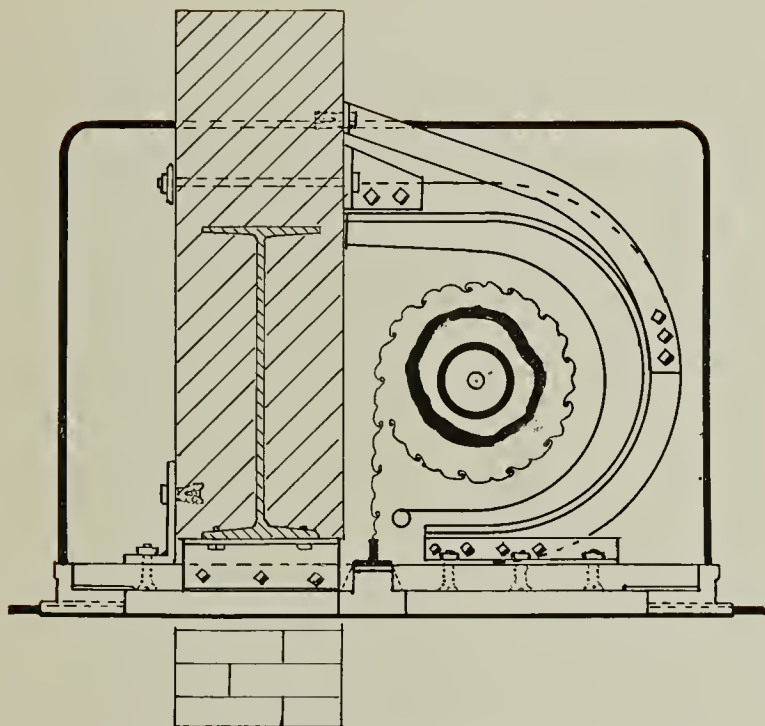


Phila. & Reading R. R., 32 doors, Coatesville, Pa.

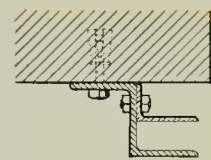


Motor driven door, Power House, U. S. Gov't, Chelsea, N. Y.

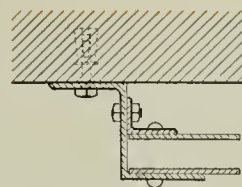




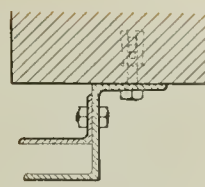
Trolley Bridge to carry the current wire through the lintel. An insulated run is provided for the trolley wheel and the gap is closed as shown when the door is up.



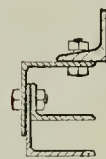
Standard zee bar guide, for doors up to 15' wide.



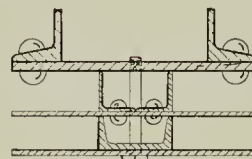
Guide for wide doors.



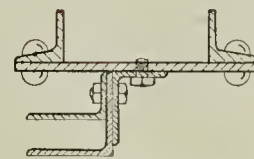
Zee bar guide for high doors.



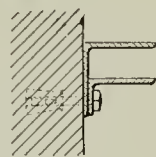
Guide fastened to steel channel.



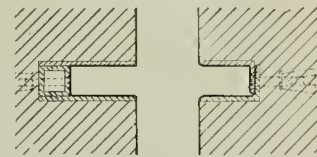
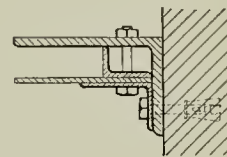
Double guide fastened to steel column.



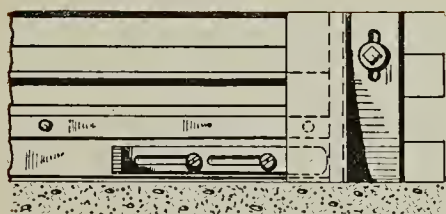
Single guide fastened to steel column.



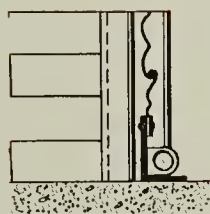
Guides for doors placed between jambs. Right guide is built out to allow for operating gears on overhead bracket.



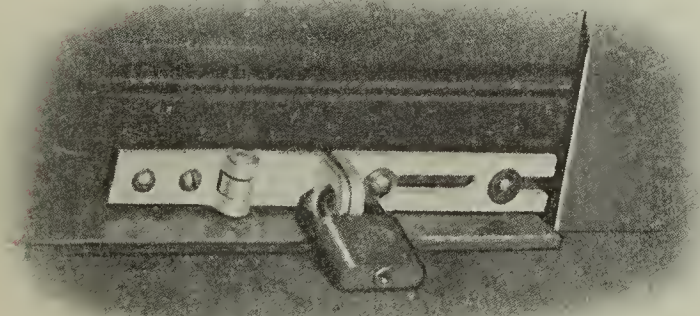
Guides recessed into masonry jambs. Right side for narrow door, left side for wide door.



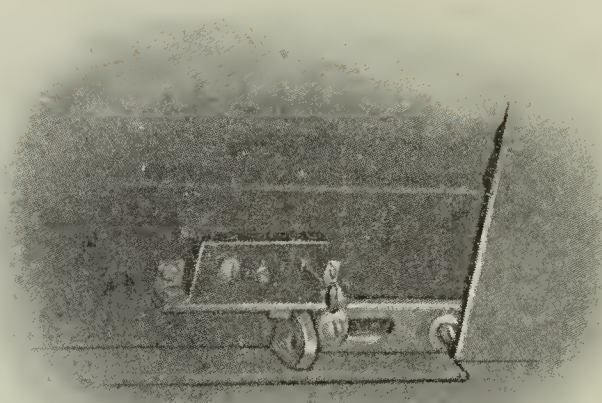
Standard locking slide bolt, operated from inside only.



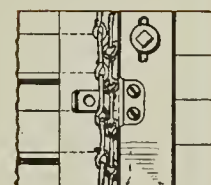
Locking slide bolt with hasp open.



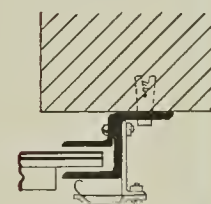
Slide bolt closed with padlock.



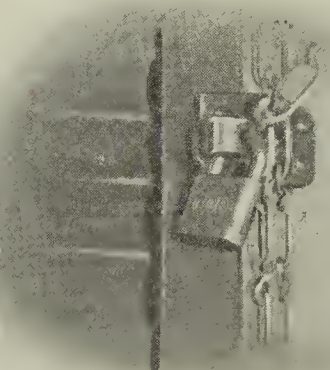
Slide bolt with rim lock, operated from either side of door.



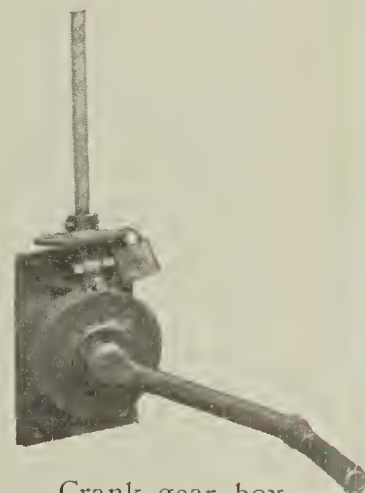
Elev.



Section standard chain lock.



Standard chain lock, with padlock.



Crank gear box with padlock.

## LOCKING DEVICES

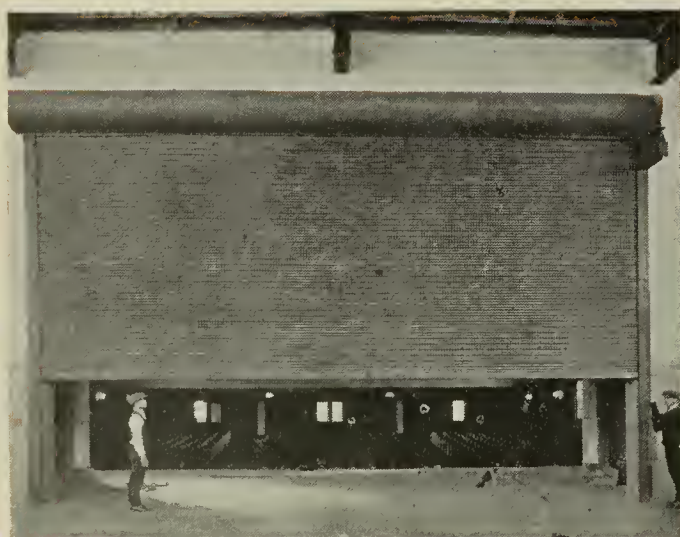




Peter Doelger Garage—Rolling doors on the outside operated from the inside.



City of Cleveland Garage—10 motor driven doors.



30 foot wide door in school, Westville, Conn.



Tenn. Copper & Chem. Co.—24 doors—Lockland, Ohio.





Young's Hotel, Honolulu, T. H. Cornell Fire Doors.



Loves Bakery, Honolulu, Hawaiian Islands.



Los Angeles Soap Co., San Francisco, Cal.



Armour & Co., Los Angeles, Cal.

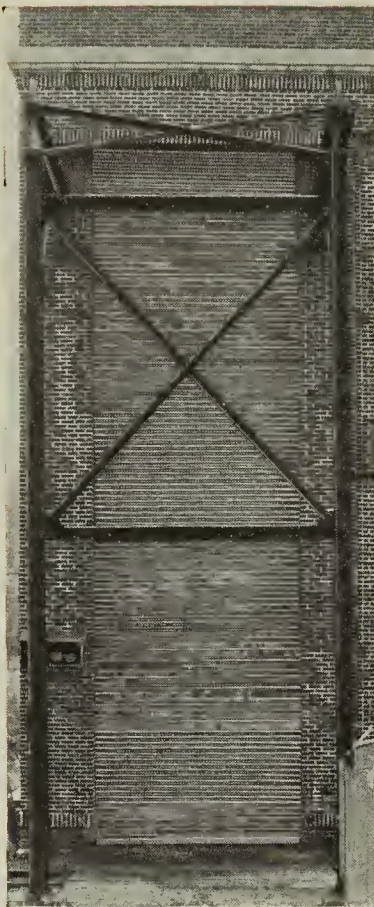


International Harvester Co., Phila., Pa.

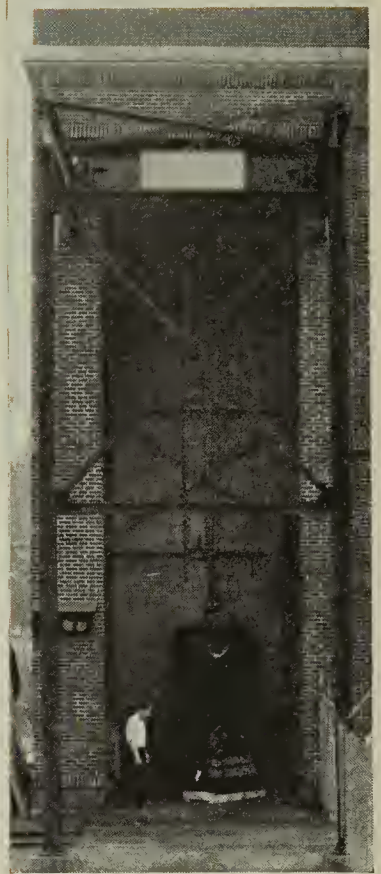




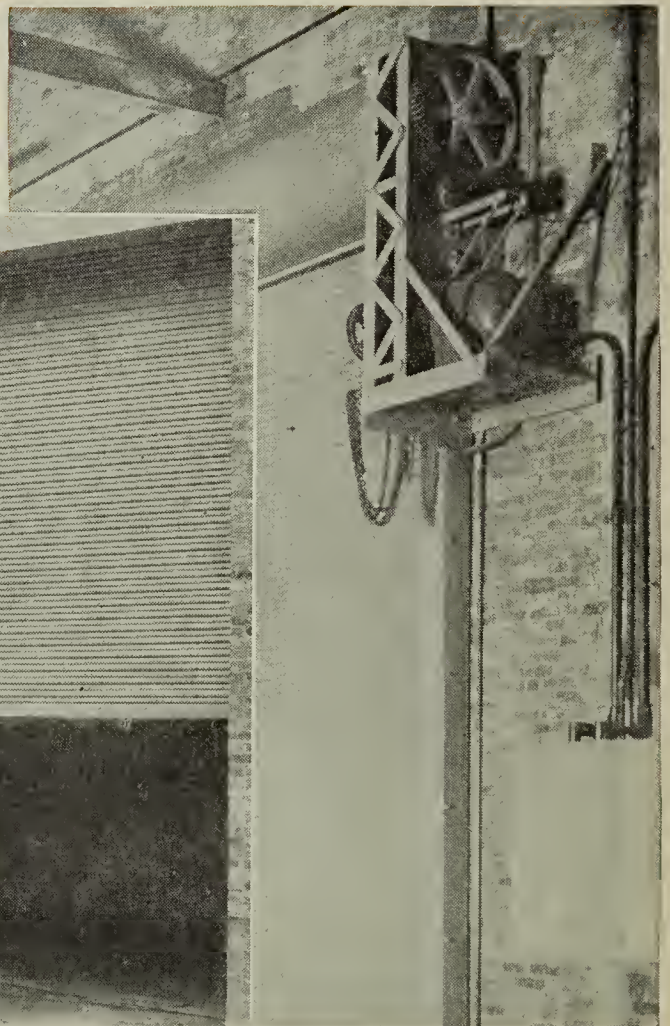
Lord & Taylor, 5th Ave, N. Y. C. Solid bronze rolling door.



Craneway door, Easton, Pa.

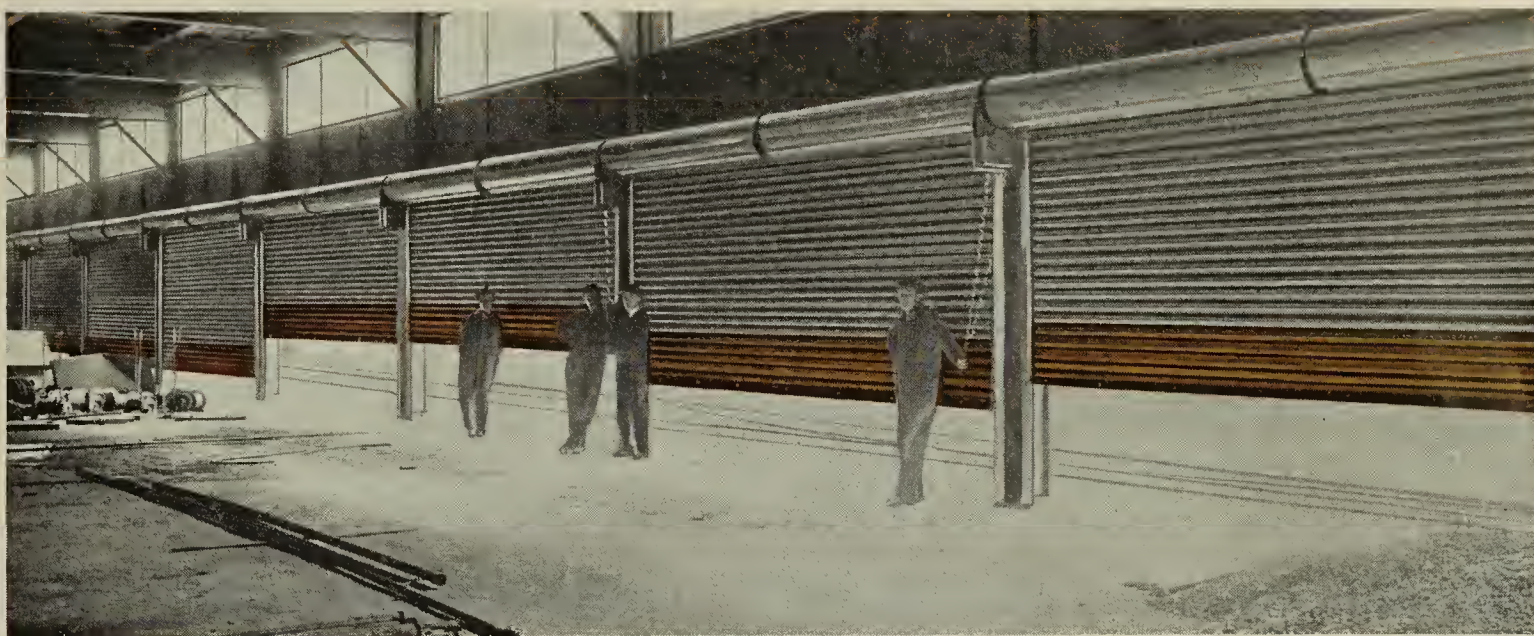


Motor driven, 35 feet high.

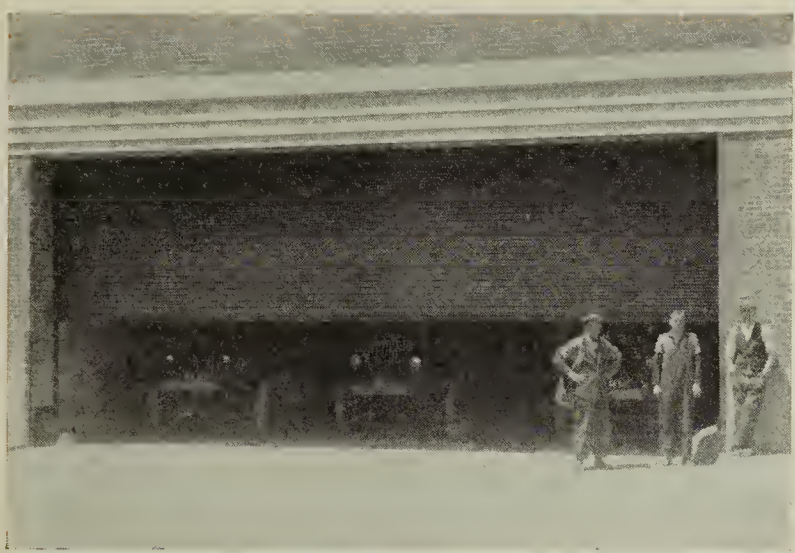


Motor-driven door at Kirkman & Sons, Bklyn. Width of opening, 45 feet. Then the widest rolling door ever made. View at right shows motor.





48 doors with non-corroding bronze bottom slats—State Pier, Portland, Me. Fay, Spofford & Thorndyke, Engs.



30 ft. motor driven door—Western Electric Co., Boston.



Wide motor driven door—Putnam Coal & Ice Co., Bklyn., N. Y.



Two 33' 6" wide motor doors—Cleveland News Co. Monks & Johnson, Engs. Crowell & Little, G. C.



## Cornell Rolling Steel Fire Doors

Labeled by Underwriters Laboratories, Inc.  
Approved by Factory Mutual Laboratories

Cornell labeled fire doors close automatically at 150° F. They have been subjected to severe fire tests and each door is checked and labeled by a Laboratories inspector before shipment.

Underwriters Laboratories, Inc., of Chicago, are the official testing laboratories for the insurance companies of America and their labels assure the lowest rates.

Cornell labeled doors operate easily, for normal service, independently of the automatic devices. They are not difficult to operate after they have closed automatically. The releasing and closing mechanism can be quickly reset, without special tools.

Cornell labeled fire doors are of large and heavy construction to withstand a severe fire over a long period. The following features are notable:

A powerful starting force, acting immediately upon the parting of the fusible link.

An automatic braking action to prevent a jarring closure, with an additional governor where required.

Non-corrodible rolling contacts for the automatic release.

Non-corrodible, self-lubricating, bearings throughout.

Fusible washers, over slotted holes, and liberal clearances for free expansion under high heat.

An automatic baffle plate to prevent the passage of flame around the coil.

Continuous end locks to stop flame by-passing the edges of the curtain in the guides.

Automatic self-aligning end locks, which assure an even coil.

Dust covers on the bottoms of the side guides which prevent interference with their free expansion.

Cornell labeled rolling steel fire doors are made in the following types. The classifications are laid down by the Underwriters and must be correctly determined to receive proper credit for the doors. The price varies with the different types.

Always specify the type of opening.

Labels are only given within the limiting sizes.

### FIREWALL OPENINGS

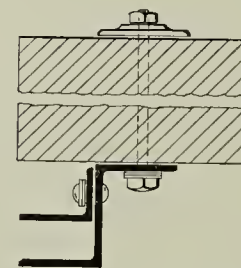
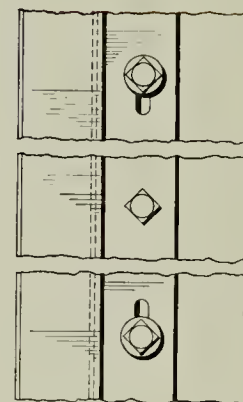
TYPE A, requiring A labels and No. 16 gauge curtains.

The most severe exposure. Standard, two doors per opening. Must be automatic closing.

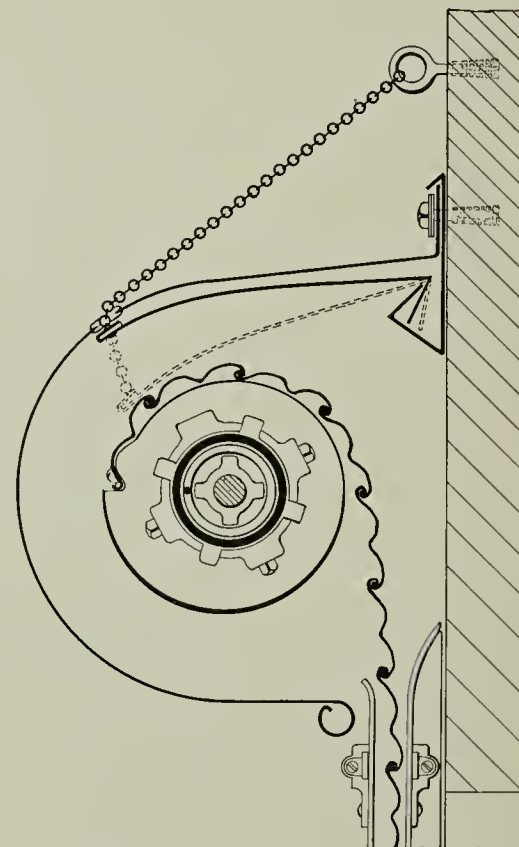
Limiting size 80 square feet, no dimension to exceed 12 feet.

Cornell Types carrying A labels:

Llenroc 1A—Face of wall location, push up operation.



Section of side guide showing fusible washers and slotted holes.



Flame stop baffle plate. Dotted line shows closed position.



Llenroc 11A—Face of wall location, hand chain operation.  
Llenroc 21A—Face of wall location, hand crank operation.  
Llenroc 101A—In the opening location, push up operation.  
Llenroc 111A—In the opening location, hand chain operation.  
Llenroc 121A—In the opening location, hand crank operation.

### VERTICAL SHAFT OPENINGS, CLASS B CORRIDOR AND ROOM PARTITION OPENINGS, CLASS C.

These openings require one door, and a lighter gauge curtain, No. 2.

Limiting size 80 square feet, no dimension to exceed 12 feet.

Cornell types, carrying either B or C label:

Llenroc 2A—Face of wall location, push up operation.  
Llenroc 12A—Face of wall location, hand chain operation.  
Llenroc 22A—Face of wall location, hand crank operation.  
Llenroc 102A—In the opening location, push up operation.  
Llenroc 112A—In the opening location, hand chain operation.  
Llenroc 122A—In the opening location, hand crank operation.

The above six types are automatic closing. They can also be furnished with labels in a non-automatic type.

### EXTERIOR WALL OPENINGS, DOORS OR SHUTTERS, CLASS D

These openings require one door, or shutter, and a 22 gauge curtain.

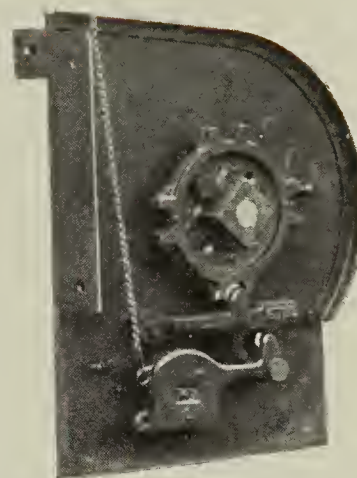
Limiting size, 100 square feet, no dimension to exceed 12 feet.

Cornell types, carrying D label:

Llenroc 3A—Face of wall location, push up operation.  
Llenroc 13A—Face of wall location, hand chain operation.  
Llenroc 23A—Face of wall location, hand crank operation.  
Llenroc 103A—In the opening location, push up operation.  
Llenroc 113A—In the opening location, hand chain operation.  
Llenroc 123A—In the opening location, hand crank operation.

The above sizes are automatic closing. They can also be furnished with labels in a non-automatic type. Cornell Class D labeled automatic closing fire shutters, above the first floor, are furnished with a device for testing and resetting from the inside of the building, when specified.

When doors or shutters, Class A, B, C or D are above the labeling limits a certificate of inspection and approval from the Underwriters Laboratories will be furnished.



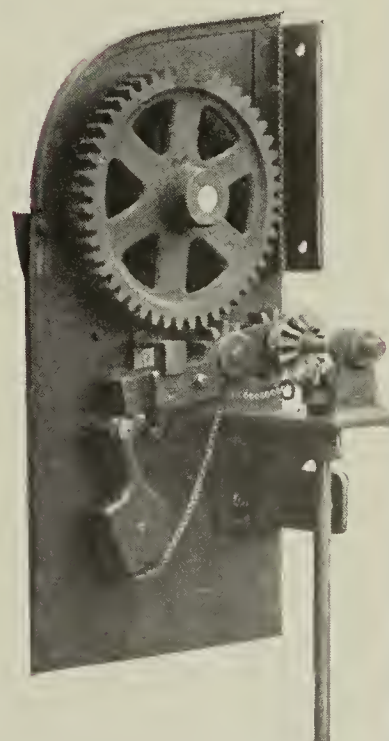
Automatic release set for normal operation.



Automatic release, after fusing of the link, showing how the pawls have rolled out of contact.



Hand crank operated bracket. Normal position.

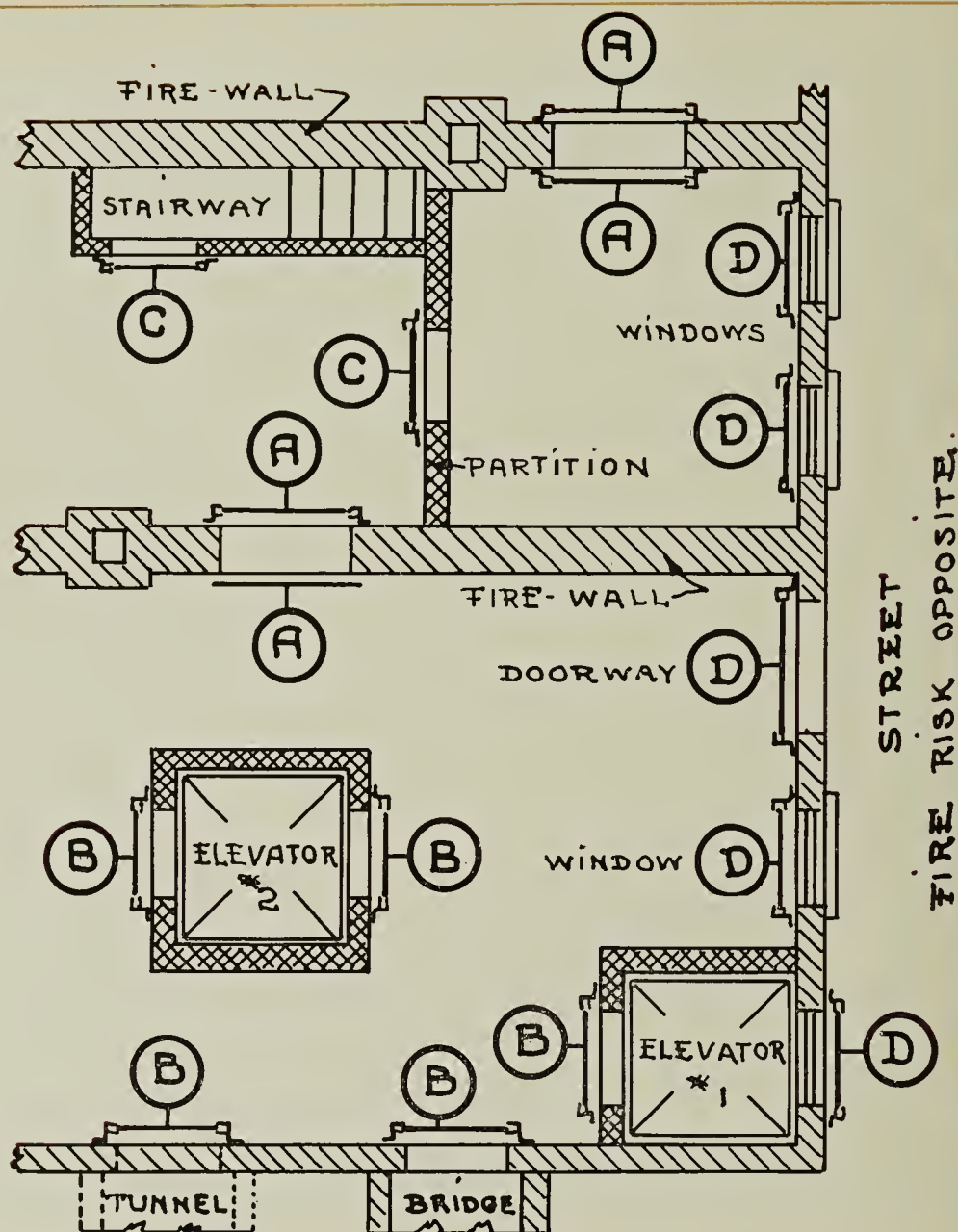


Bracket, after fusing of the link, showing how all gears are freed for closing.

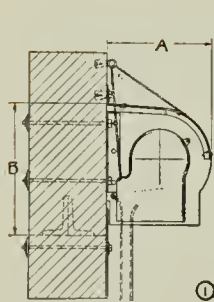


### FLOOR PLAN

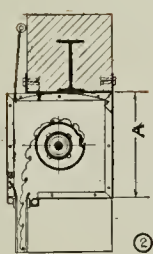
Illustrates locations of labelled  
Rolling Doors and Shutters.  
Ringed letters refer to different  
class labels as follows:  
Class A—For Fire Walls. No. 16  
gauge.  
Class B—For Vertical Shafts. No.  
20 gauge.  
Class C—For Corridor and Room  
Partitions. No. 20 gauge.  
Class D—For Exterior Wall Open-  
ings. No. 22 gauge.



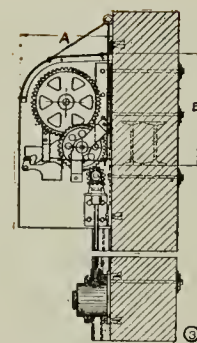
## Types of Cornell Labeled Underwriters Rolling Doors



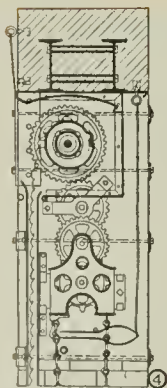
1. Self  
coiling  
operation,  
with handles.  
Automatic  
door on  
face of  
wall.  
Types:  
*Llenroc*  
1A, 2A, 3A.



2. Self  
coiling  
operation  
with  
handles.  
Automatic  
door under  
lintel.  
Types:  
*Llenroc*  
101A, 102A,  
103A.



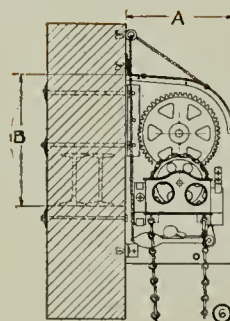
3. Hand crank  
operation.  
Automatic  
door on  
face of  
wall.  
Types:  
*Llenroc*  
21A, 22A, 23A.



4. Hand chain  
operation.  
Automatic  
door under  
lintel.  
Types:  
*Llenroc*  
111A, 112A,  
113A.



5. Double  
doors in a  
fire wall.  
One coiling  
above the  
other.  
Types:  
*Llenroc*  
101A or 111A.



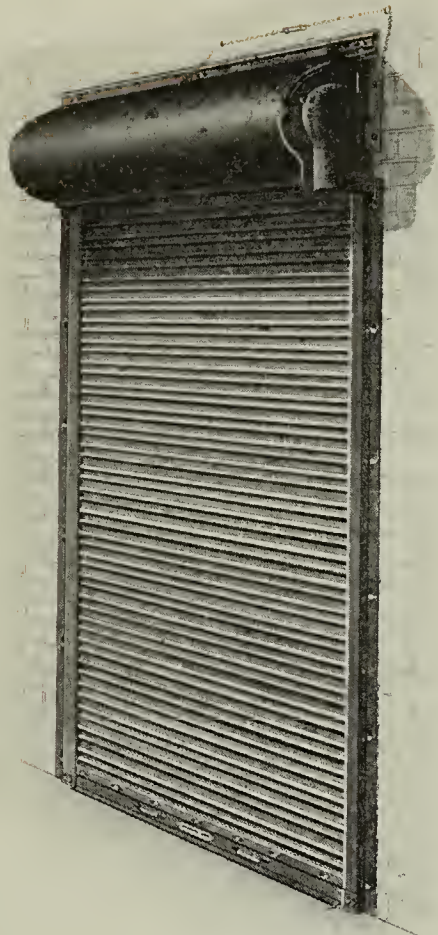
6. Hand chain  
operation.  
Types:  
*Llenroc*  
11A, 12A, 13A.

All types:  
A=15" to 18"  
A=17" to 22"

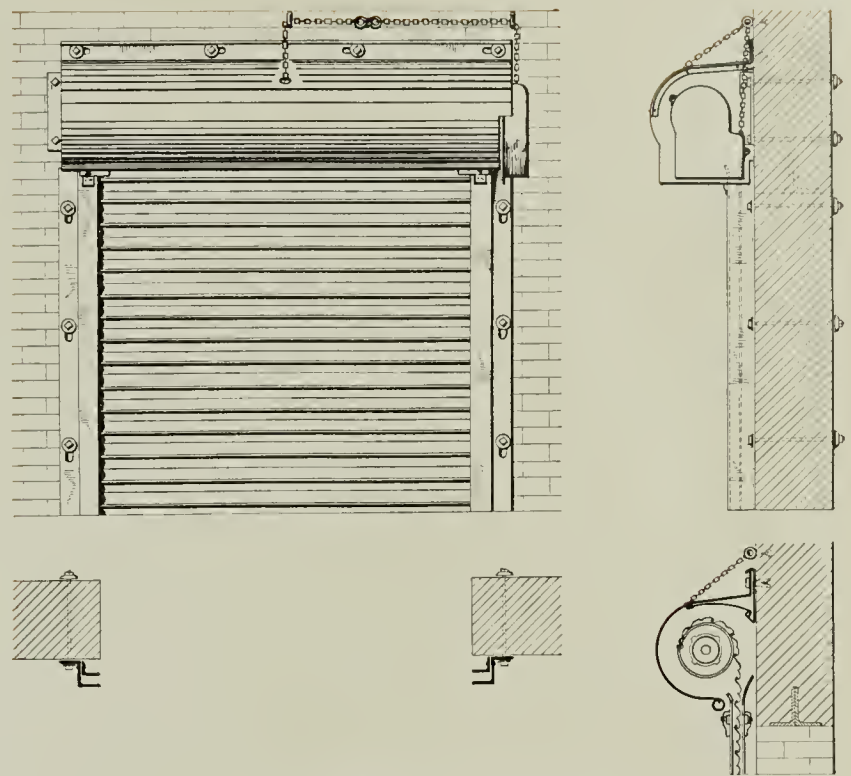
Note: Types marked with an "A" after the number are automatic closing.  
Doors numbered from 1 to 10 are operated by handles.  
Doors numbered from 10 to 20 are operated by chain.  
Doors numbered from 20 to 30 are operated by hand crank.  
Doors from 100 to 200 are located between jambs

Guides are shown fastened with through Bolts. Expansion bolts are approved in many locations.

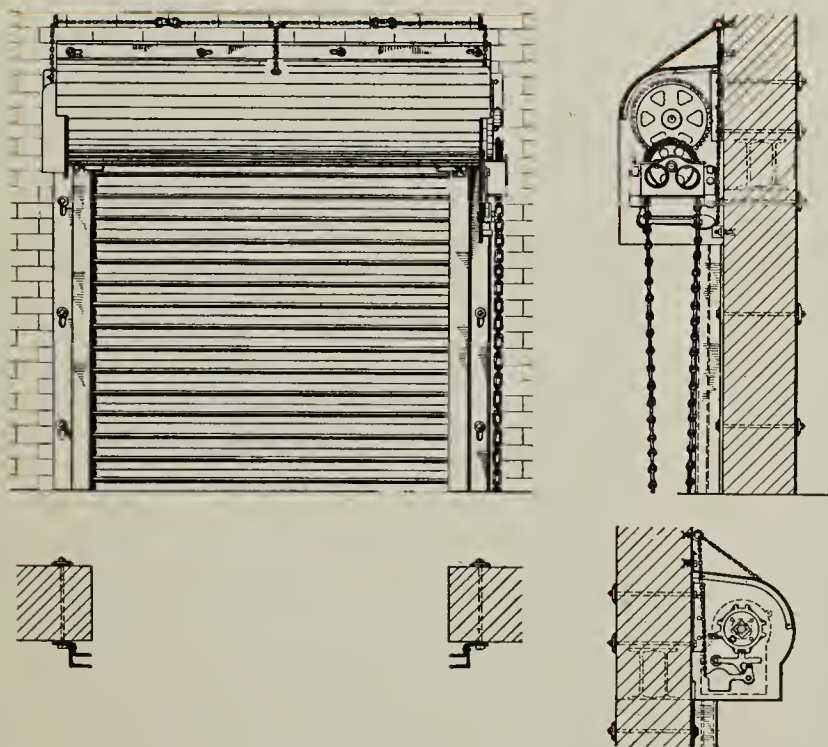




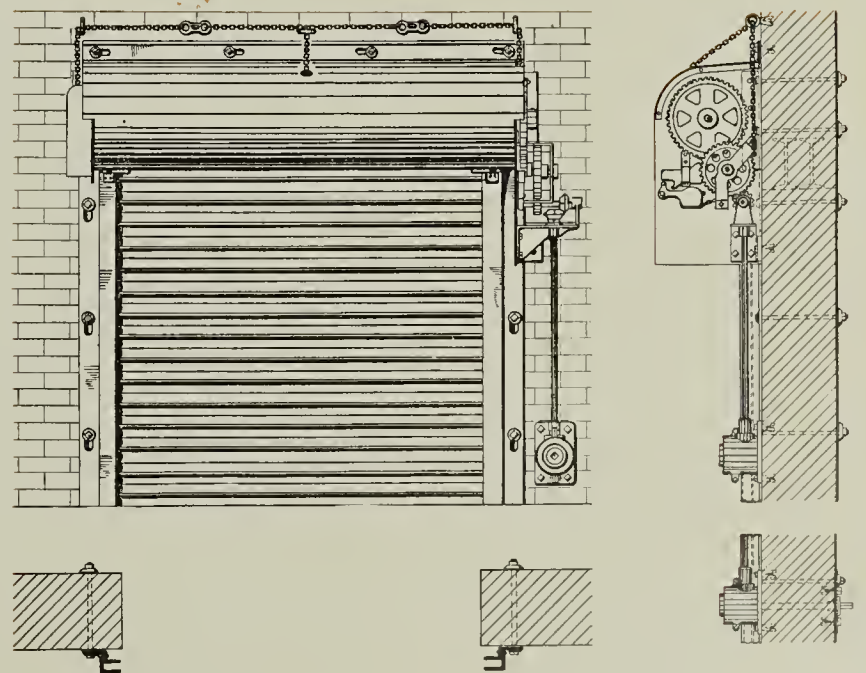
LLENROC 1A, 2A, 3A  
Push up, self coiling type. Underwriters labelled. Face of wall location. Perspective view.



LLENROC 1A, 2A, 3A  
Self coiling type. Labelled, automatic. Face of wall location.  
Fire wall doors, carrying Class A labels, are usually placed in pairs, one each side of opening. This may be done with any type of operation.



LLENROC 11A, 12A, 13A  
Chain operated type. Labeled, automatic. Face of wall location. Spring release mechanism shown in lower right corner.



LLENROC 21A, 22A, 23A  
Hand crank operation. Labeled, automatic. Face of wall location. May be operated from either side, if desired, as indicated.

Guides are shown fastened with through Bolts. Expansion bolts are approved in many locations.

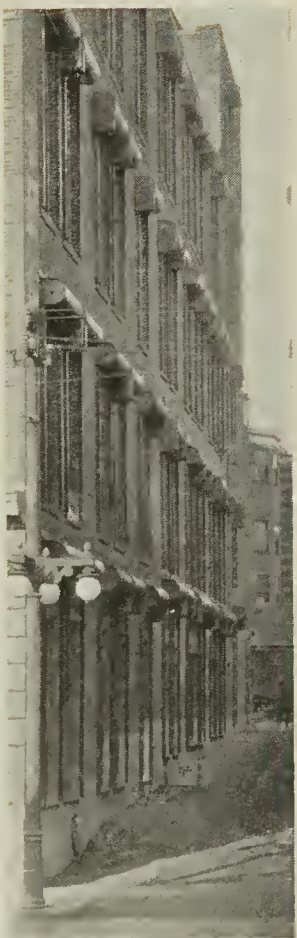




Double fire doors, with concealed coils. Horn & Hardart, N. Y. C.



Double labeled fire doors, Rubens Restaurant, N. Y. C.



98 labeled fire shutters  
N. E. Tel. & Tel.  
Portland, Me.

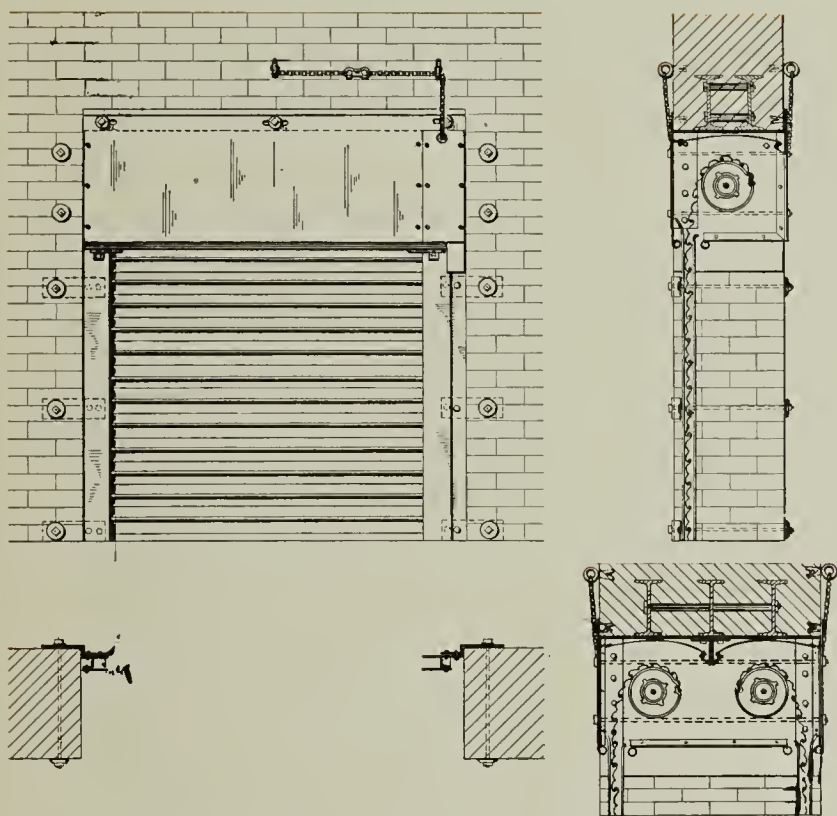


Double labeled fire doors, Williams Club, N. Y. C.



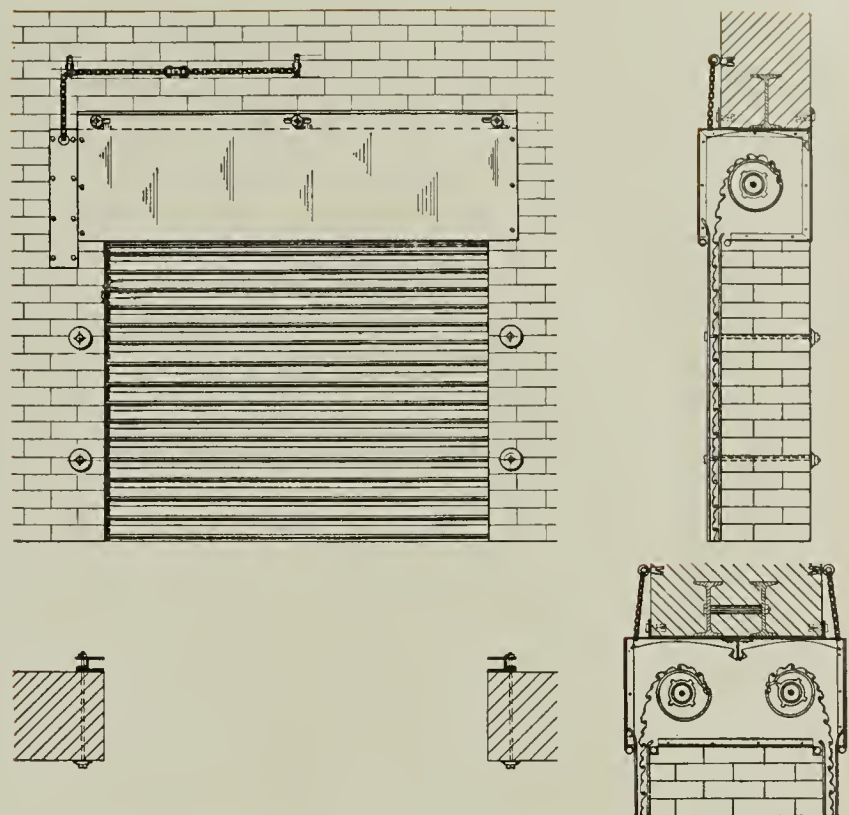
Shreve & Lamb, Archts. Geo. A. Shedden Co., Conts.





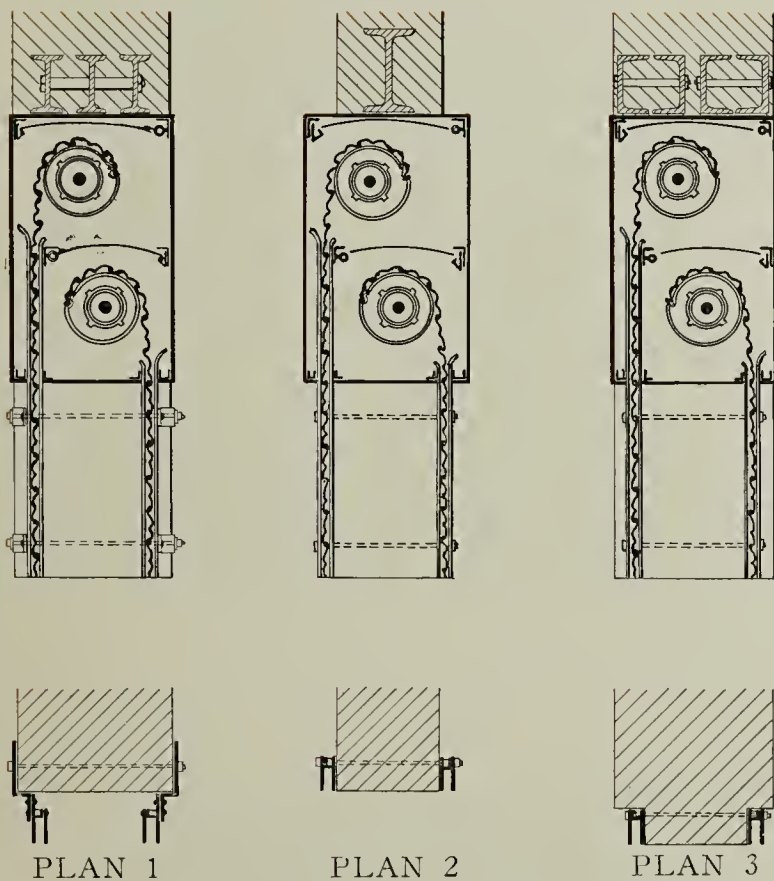
LLENROC 101A, 102A, 103A—PLAN 1

Push up, self coiling type. Door coil under the lintel. Guides placed between jambs. Lower right corner shows double fire wall doors.



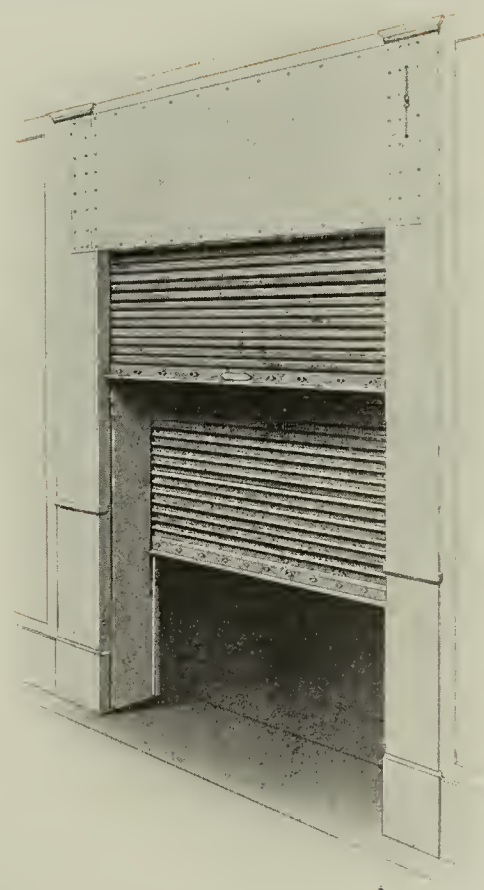
LLENROC 101A, 102A, 103A—PLAN 2

Self coiling type. Door coil under lintel. Guides on face of jambs. Lower right corner shows double fire wall doors.



LLENROC 101A—DOUBLE AND SUPERIMPOSED

Used with Class A labeled fire doors only. Door coils are placed under the lintel. Guides are located as shown.



LLENROC 101A—DOUBLE AND SUPERIMPOSED

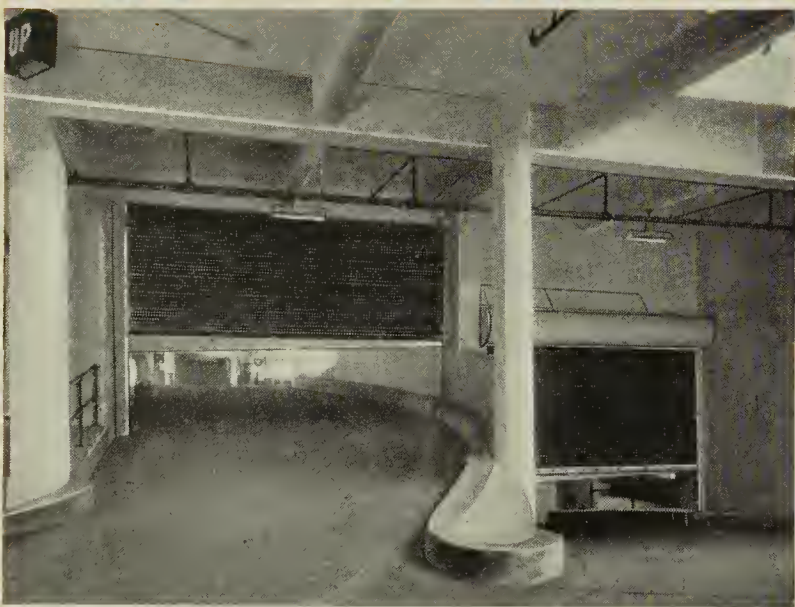
Perspective view. Guides as in Plan 3, but fastened with long expansion bolts and built in.

Guides are shown fastened with through Bolts. Expansion bolts are approved in many locations.





Motor Mart Garage, Boston. 59 Cornell Fire Doors. Ralph Harrington Doane, Archt. Chase & Gilbert, Contractors.



Bowdoin Square Garage, Boston. 32 Cornell Fire Doors.



Ralph Harrington Doane, Archt. Chase & Gilbert, Contractors.

**CORNELL IRON WORKS**

L.I. CITY  
N.Y.

UNDERWRITERS' LABORATORIES, INC.

INSPECTED

FIRE DOOR FOR OPENING IN VERTICAL SHAFT

No S 86959

I  
N  
G

**LICENSED  
DOORS**

PATENTED - U. S. Nos.

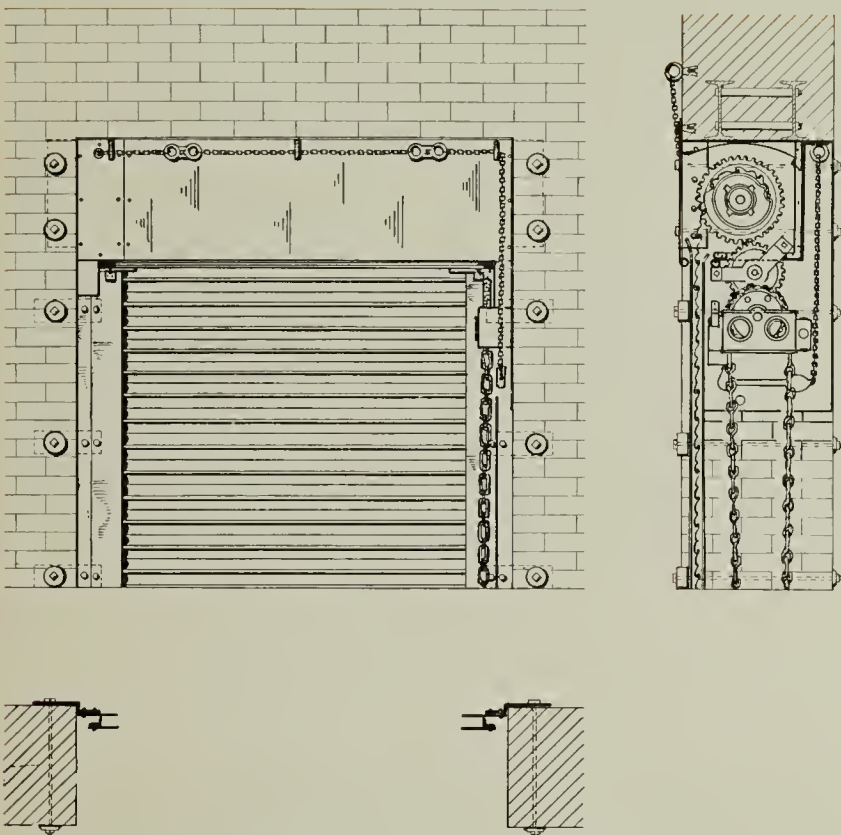
1325524 - 12, 23, 19

1074187 - 9, 30, 17

1014915 - 1, 9, 12

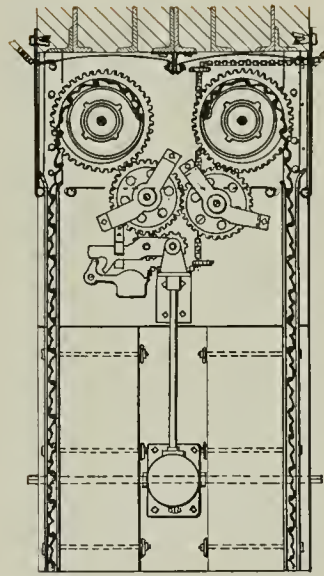
1332942 - 3, 9, 20





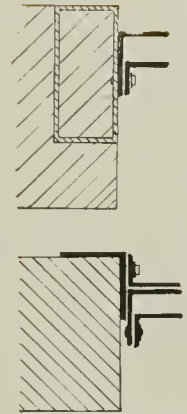
LLENROC 111A, 112A, 113A

Chain, sprocket and gear operation. Coil under the lintel—Guides placed between jambs.

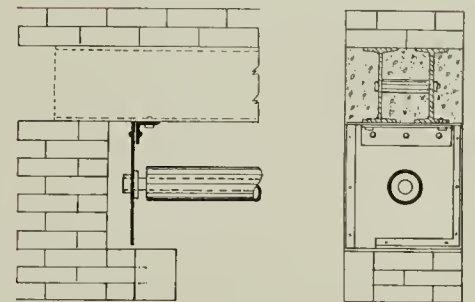
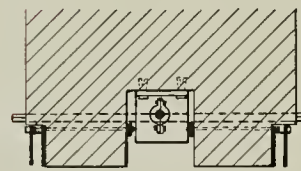


LLENROC 121A

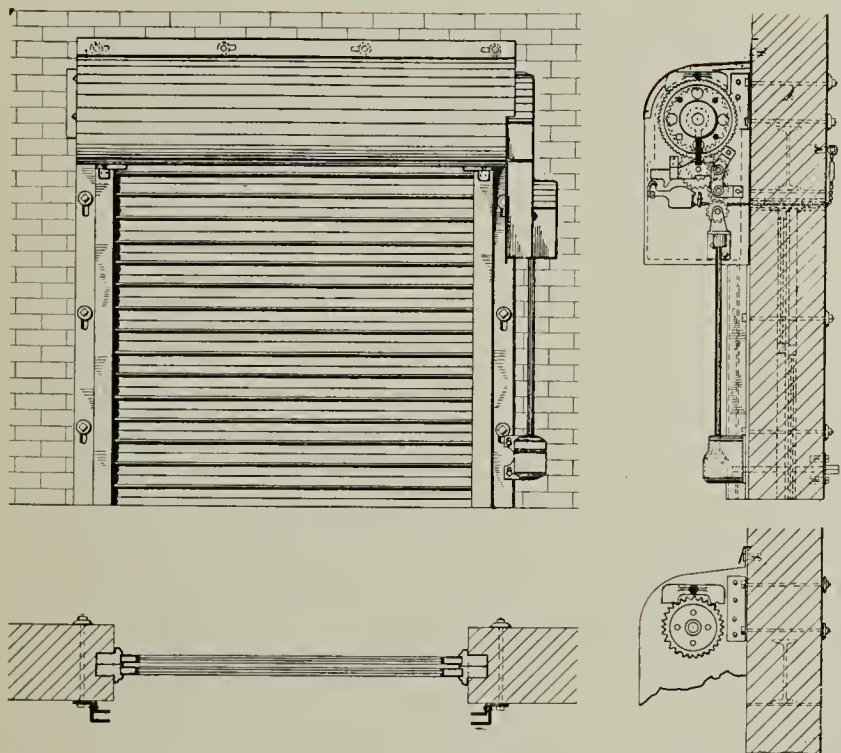
Double, Class A, labeled, fire wall doors, operated simultaneously by hand crank. Coils under lintel, guides between the jambs.



Upper views shows side guide fastened to iron brick built into the wall.  
Lower view shows guide fastened to angle jamb.

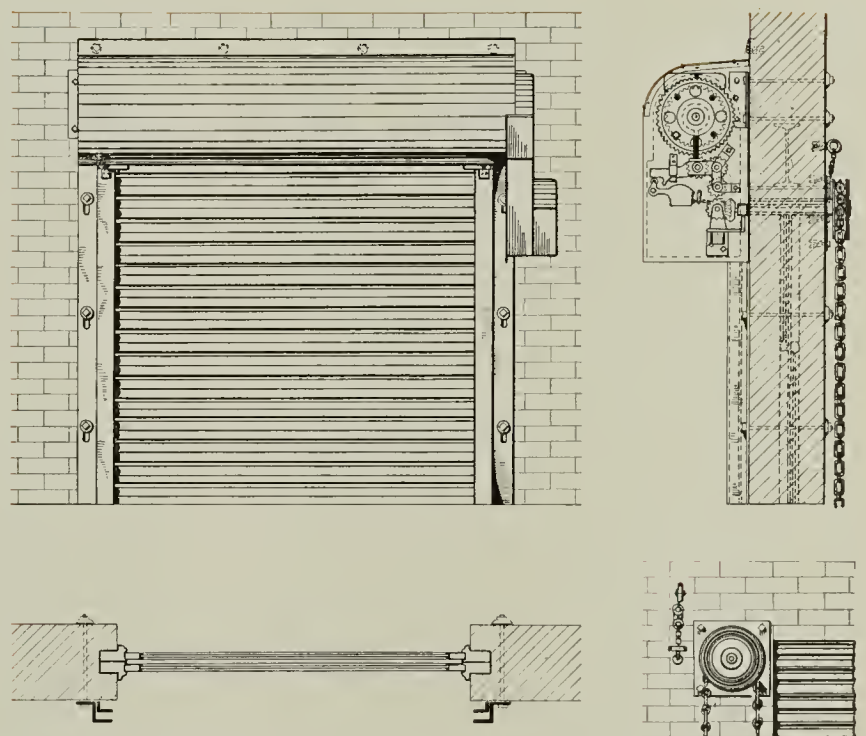


Method of fastening the automatic bracket overhead, to a steel lintel.



LLENROC 3A, AS AUTOMATIC FIRE SHUTTER. PLAN 1.

Located on exterior wall to protect window opening. The gearing resets and raises the shutter. Operation by hand crank inside the building. Lower right corner shows small escapement governor.



LLENROC 3A, AS AUTOMATIC FIRE SHUTTER. PLAN 2.

Raising and resetting the shutter after test is accomplished by hand chain inside the building. Lower right corner shows chain and sprocket on inside wall. Chain is removable when not in use.





Labeled door, coiled in the lintel—Keith's



Theatre, Portland, Me. Door closed as in case of fire.



Labeled door for scene shifting, Phila., Pa.

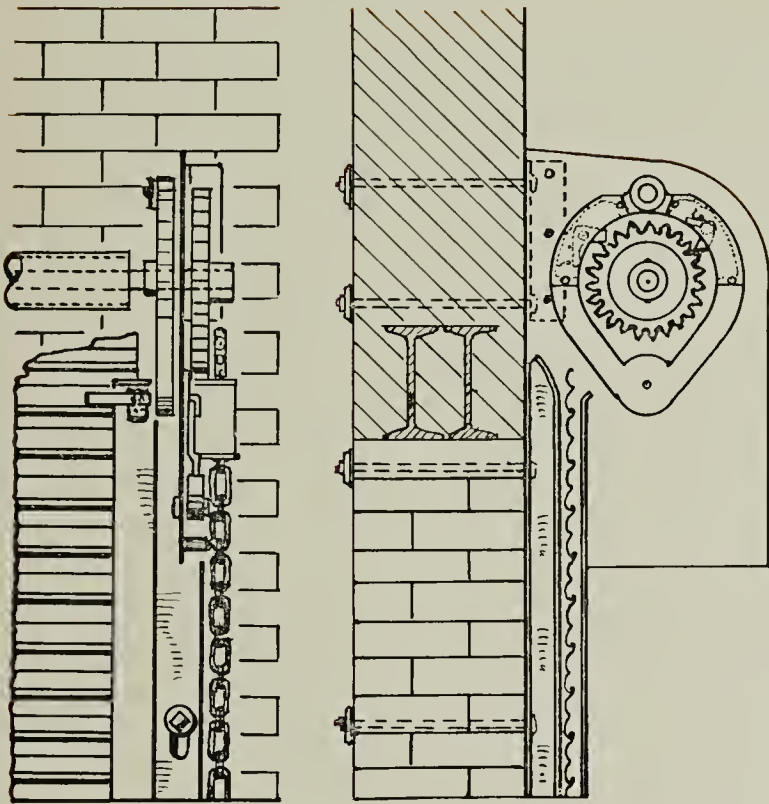


Labeled Underwriters doors on elevator shaft, Phila., Pa.

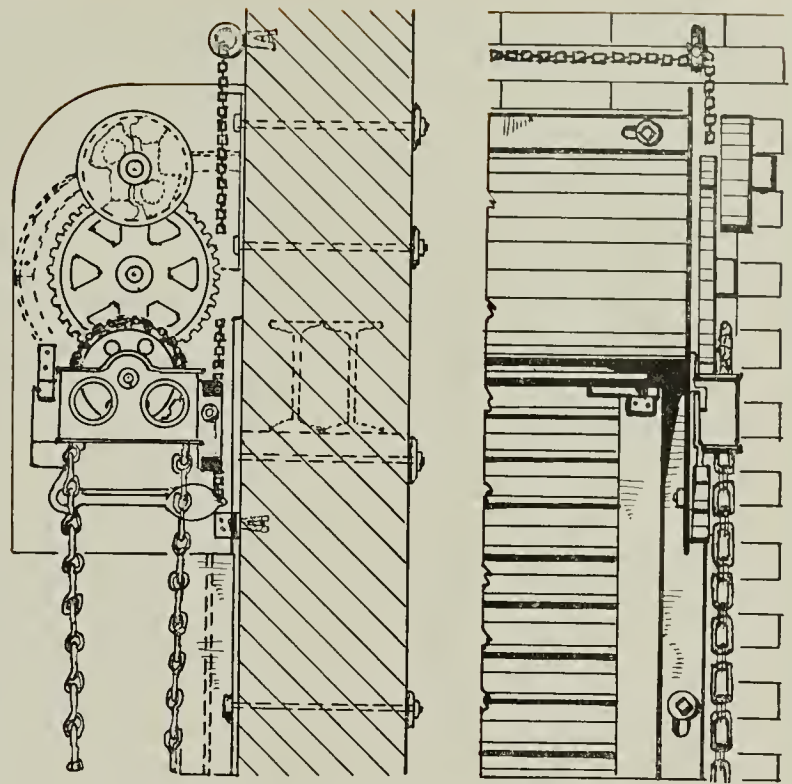


Fire doors on bridge, Saks & Co., N. Y. Shreve & Lamb, Archts. Thompson & Starrett, G. C.

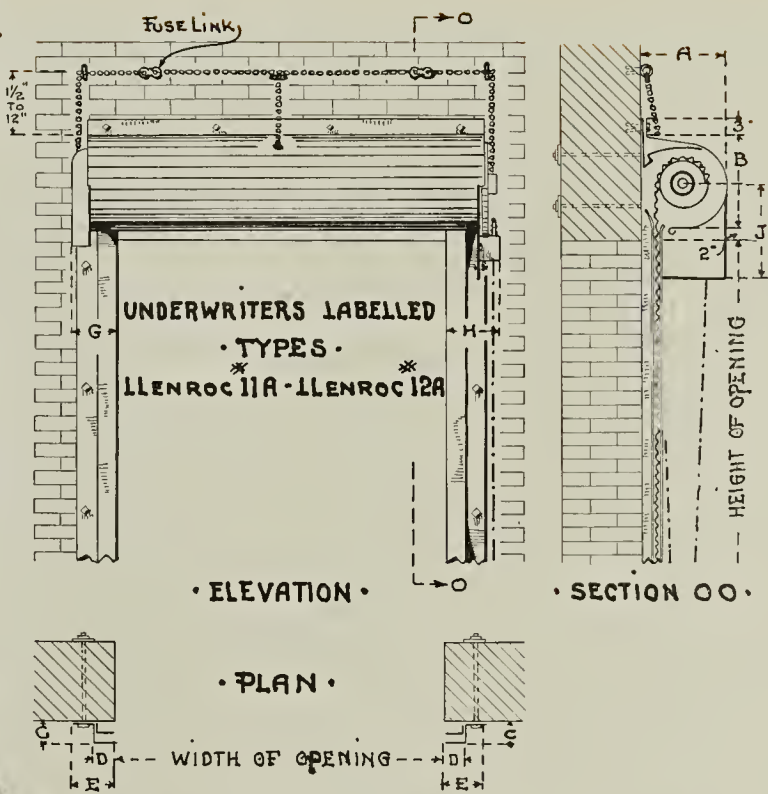
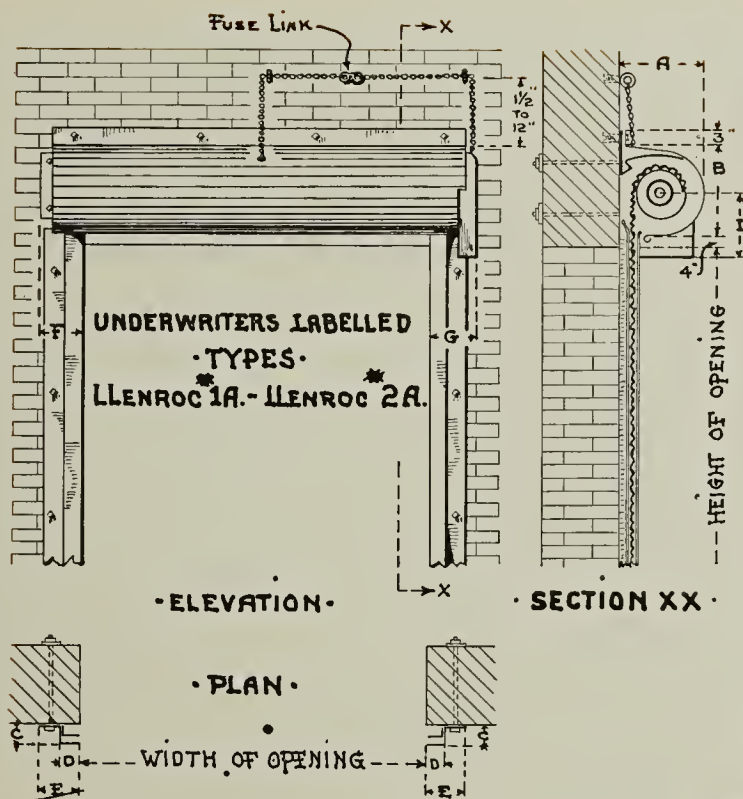




Escapement type of governor applied to automatic fire door. This form of governor controls the descent of the curtain from the start, makes a loud warning noise and should be used for doorways serving as possible exits.



Centrifugal type of governor applied to automatic fire door. This form of governor prevents excessive speed in the closing of large doors.

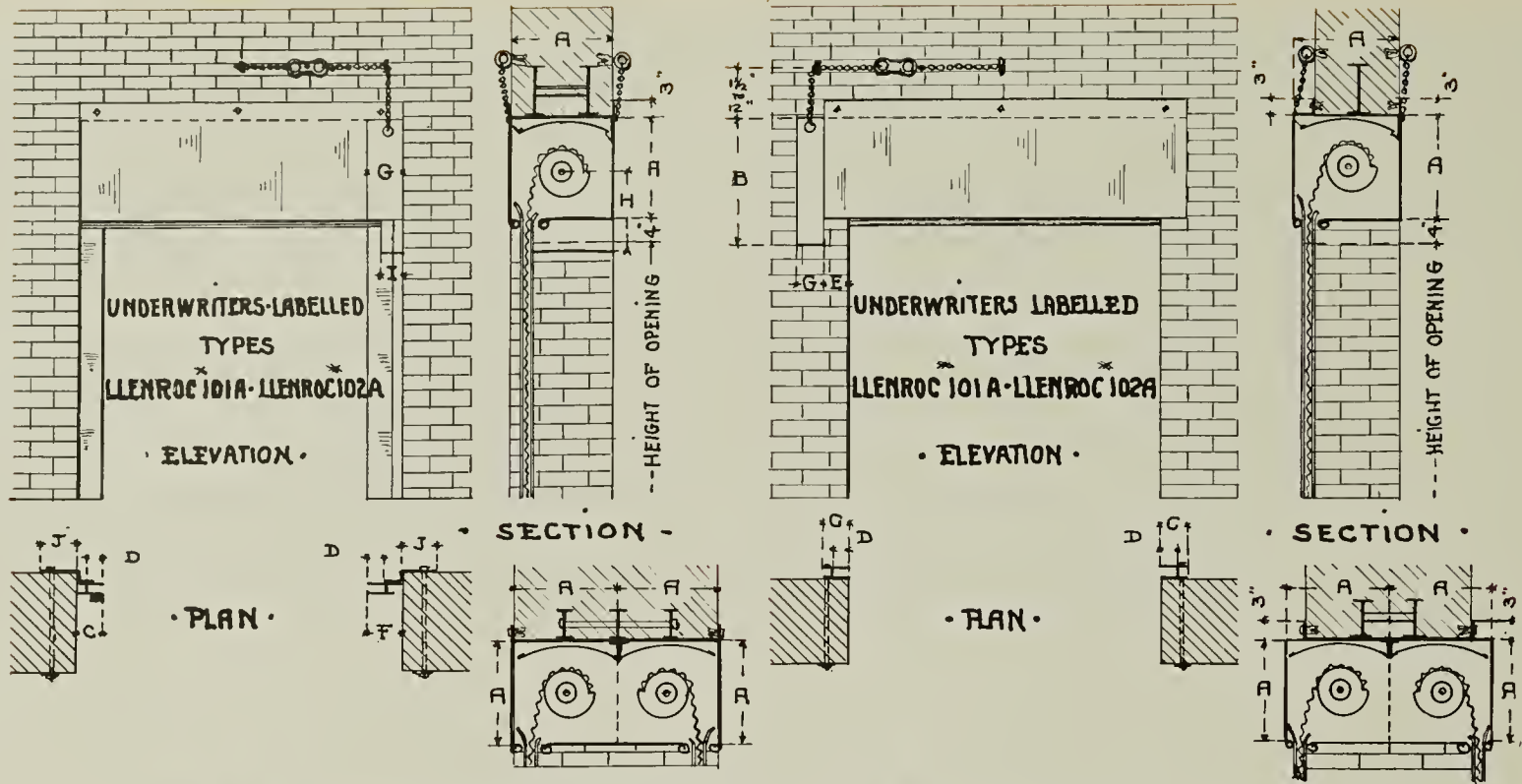


Height in Feet	Width of Opening 0'-0" to 6'-0"										6'-0" to 8'-0"						8'-0" to 10'-0"					10'-0" to 12'-0"				
	A	B	C	D	E	F	G	H	I	J	C	D	E	F	G	H	D	E	F	G	H	D	E	F	G	H
0'- 6'	15"	16"	3"	2"	5 <sup>3</sup> / <sub>16</sub> "	7 <sup>1</sup> / <sub>2</sub> "	8"	9"	12"	20"	4"	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	4 <sup>1</sup> / <sub>4</sub> "	7 <sup>1</sup> / <sub>4</sub> "	9"	9 <sup>1</sup> / <sub>2</sub> "	11"
6'- 8'	16"	17"	3"	2"	5 <sup>3</sup> / <sub>16</sub> "	7 <sup>1</sup> / <sub>2</sub> "	8"	9"	12"	20"	4"	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	4 <sup>1</sup> / <sub>4</sub> "	7 <sup>1</sup> / <sub>4</sub> "	9"	9 <sup>1</sup> / <sub>2</sub> "	11"
8'-10'	17"	18"	3"	2"	5 <sup>3</sup> / <sub>16</sub> "	7 <sup>1</sup> / <sub>2</sub> "	8"	9"	12"	20"	4"	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	4 <sup>1</sup> / <sub>4</sub> "	7 <sup>1</sup> / <sub>4</sub> "	9"	9 <sup>1</sup> / <sub>2</sub> "	11"
10'-12'	18"	19"	3"	2"	5 <sup>3</sup> / <sub>16</sub> "	7 <sup>1</sup> / <sub>2</sub> "	8"	9"	12"	20"	4"	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	2 <sup>13</sup> / <sub>16</sub> "	5 <sup>7</sup> / <sub>8</sub> "	8"	8 <sup>1</sup> / <sub>2</sub> "	9 <sup>1</sup> / <sub>2</sub> "	4 <sup>1</sup> / <sub>4</sub> "	7 <sup>1</sup> / <sub>4</sub> "	9"	9 <sup>1</sup> / <sub>2</sub> "	11"

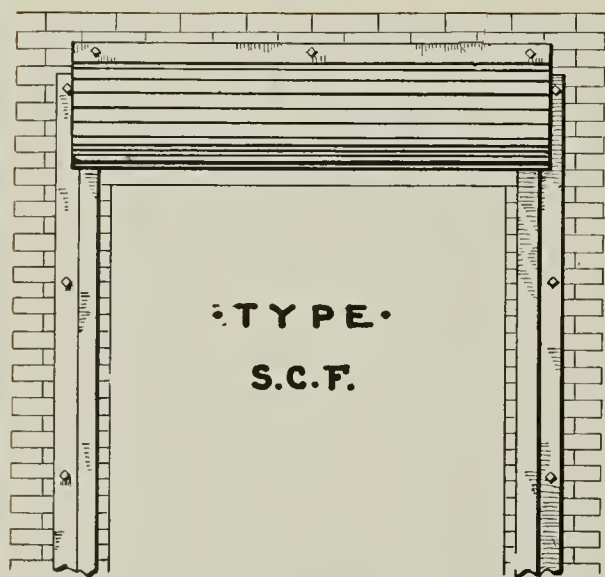
Guides are shown fastened with through Bolts. Expansion bolts are approved in many locations.



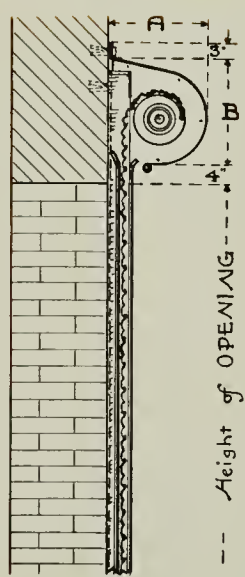
AUTOMATIC FIRE DOORS  
UNDERWRITERS LABELLED



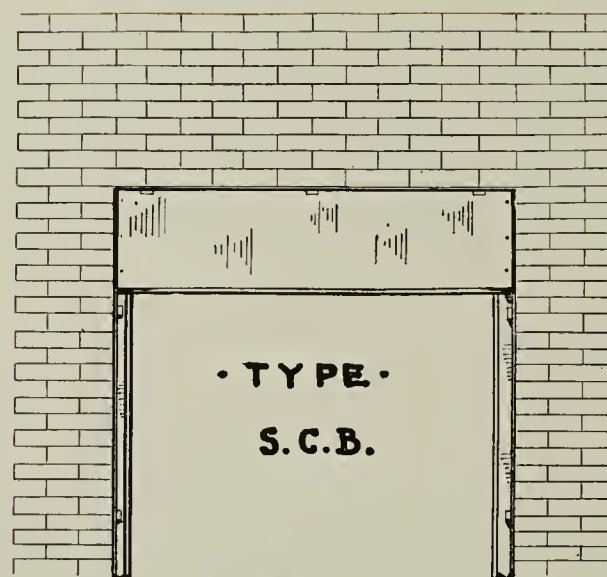
Height in Feet	Width of Opening 0'-0" to 6'-0"										6'-0" to 8'-0"						8'-0" to 10'-0"					10'-0" to 12'-0"					
	A	B	C	D	E	F	G	H	I	J	C	D	E	F	G	H	D	E	F	G	H	C	D	E	F	G	H
0'- 6'	15"	24"	4"	2¼"	4"	5"	6"	12"	4"	6"	4½"	3"	4½"	6"	6"	12"	3"	4½"	6"	6"	12"	6"	4½"	6"	8"	6"	12"
6'- 8'	16"	24"	4"	2¼"	4"	5"	6"	12"	4"	6"	4½"	3"	4½"	6"	6"	12"	3"	4½"	6"	6"	12"	6"	4½"	6"	8"	6"	12"
8'-10'	17"	24"	4"	2¼"	4"	5"	6"	12"	4"	6"	4½"	3"	4½"	6"	6"	12"	3"	4½"	6"	6"	12"	6"	4½"	6"	8"	6"	12"
10'-12'	18"	24"	4"	2¼"	4"	5"	6"	12"	4"	6"	4½"	3"	4½"	6"	6"	12"	3"	4½"	6"	6"	12"	6"	4½"	6"	8"	6"	12"



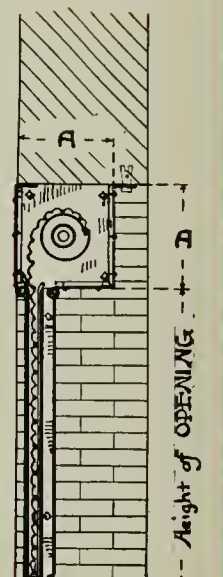
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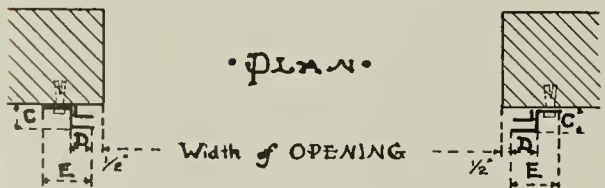
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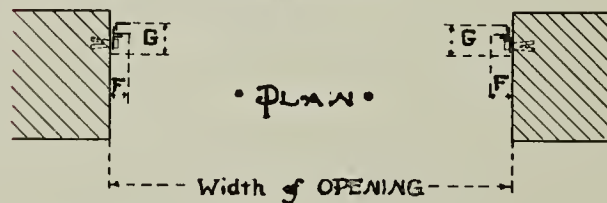
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SECTION



PLAN

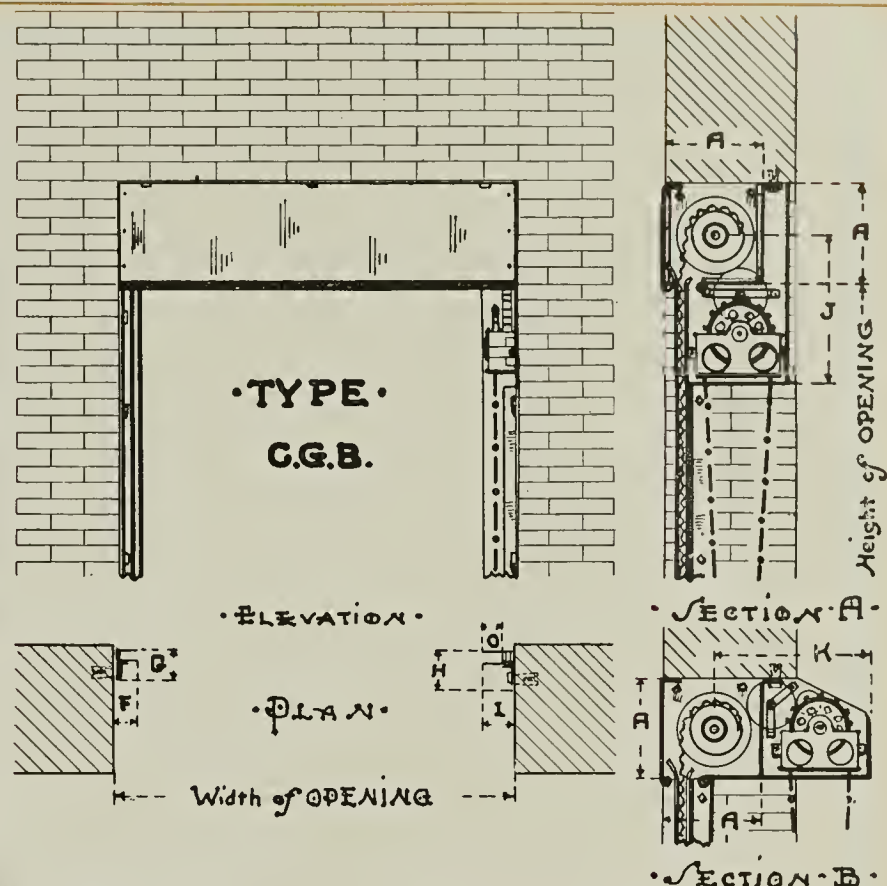
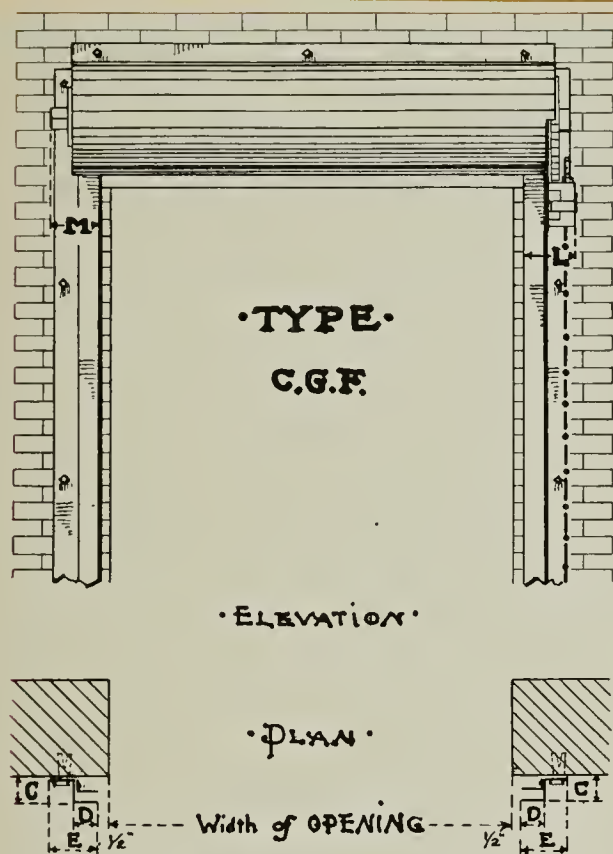


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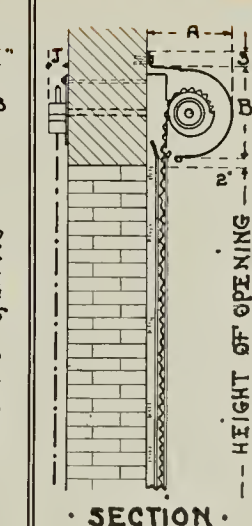
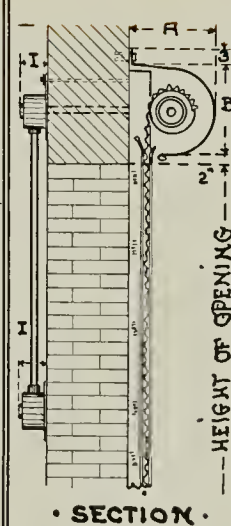
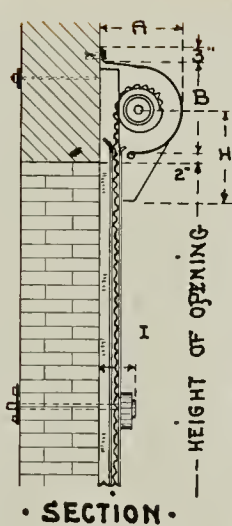
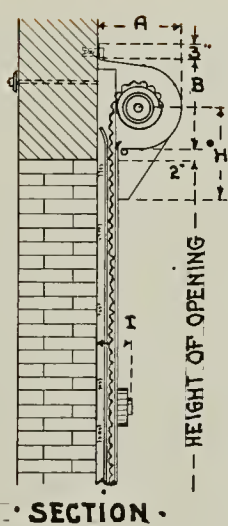
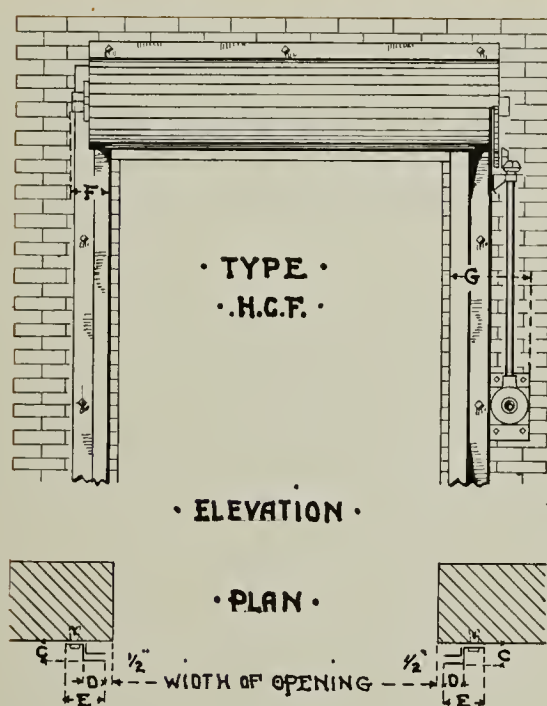
Height in Feet	Opening up to 10'-0" Wide						
	A	B	C	D	E	F	G
5'-0"	13"	14"	3"	2 11/16"	5 3/16"	2 1/2"	3 1/2"
8'-0"	14"	15"	3"	2 11/16"	5 3/16"	2 1/2"	3 1/2"
10'-0"	15"	16"	3"	2 11/16"	5 3/16"	2 1/2"	3 1/2"
12'-0"	16"	17"	3"	2 11/16"	5 3/16"	2 1/2"	3 1/2"

Guides are shown fastened with through Bolts.  
Expansion bolts are approved in many locations.





Height in Feet	Width of Opening 8'-0" to 15'-0"															Width of Opening 15'-0" to 18'-0"								Width of Opening 18'-0" to 21'-0"								
	A	B	C	D	E	F	G	H	I	J	K	L	M	O	P	C	D	E	F	G	H	I	O	D	E	F	G	H	I	L	M	O
0'- 8'	15"	16"	3"	2 <sup>11</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>16</sub> "	2 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	4 <sup>1</sup> / <sub>2</sub> "	22"	24"	6"	10"	2 <sup>1</sup> / <sub>2</sub> "	13"	4"	3 <sup>1</sup> / <sub>16</sub> "	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	5"	3"	4 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>4</sub> "	4"	4"	5"	6"	10"	12"	4"
8'-10'	16"	17"	3"	2 <sup>11</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>16</sub> "	2 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	4 <sup>1</sup> / <sub>2</sub> "	22"	24"	6"	10"	2 <sup>1</sup> / <sub>2</sub> "	13"	4"	3 <sup>1</sup> / <sub>16</sub> "	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	5"	3"	4 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>4</sub> "	4"	4"	5"	6"	10"	12"	4"
10'-13'	17"	18"	3"	2 <sup>11</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>16</sub> "	2 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	4 <sup>1</sup> / <sub>2</sub> "	26"	26"	8"	10"	2 <sup>1</sup> / <sub>2</sub> "	18"	4"	3 <sup>1</sup> / <sub>16</sub> "	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	5"	3"	4 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>4</sub> "	4"	4"	5"	6"	12"	12"	4"
13'-15'	18"	19"	3"	2 <sup>11</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>16</sub> "	3"	3"	5"	4 <sup>1</sup> / <sub>2</sub> "	26"	26"	8"	12"	2 <sup>1</sup> / <sub>2</sub> "	18"	4"	3 <sup>1</sup> / <sub>16</sub> "	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	5"	3"	4 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>4</sub> "	4"	4"	5"	6"	12"	12"	4"
15'-20'	19"	20"	3"	2 <sup>11</sup> / <sub>16</sub> "	5 <sup>3</sup> / <sub>16</sub> "	3"	3"	5"	4 <sup>1</sup> / <sub>2</sub> "	26"	26"	8"	12"	2 <sup>1</sup> / <sub>2</sub> "	18"	4"	3 <sup>1</sup> / <sub>16</sub> "	6"	3 <sup>1</sup> / <sub>2</sub> "	3 <sup>1</sup> / <sub>2</sub> "	5"	5"	3"	4 <sup>1</sup> / <sub>2</sub> "	7 <sup>1</sup> / <sub>4</sub> "	4"	4"	5"	6"	12"	12"	4"



Height in Feet	Width of Opening—8'-0" to 15'-0"										15'-0" to 18'-0"					18'-0" to 21'-0"			
	A	B	C	D	E	F	G	H	I	J	C	D	E	F	G	D	E	F	G
0'-8'	15"	16"	3"	2 11/16"	5 3/16"	10"	12"	16"	6"	4"	4"	3 1/16"	6"	10"	13"	4 1/2"	7 1/4"	12"	15"
8'-10'	16"	17"	3"	2 11/16"	5 3/16"	10"	12"	16"	6"	4"	4"	3 1/16"	6"	10"	13"	4 1/2"	7 1/4"	12"	15"
10'-13'	17"	18"	3"	2 11/16"	5 3/16"	10"	12"	24"	6"	6"	4"	3 3/16"	6"	10"	13"	4 1/2"	7 1/4"	12"	15"
13'-15'	18"	19"	3"	2 11/16"	5 3/16"	12"	12"	24"	6"	6"	4"	3 1/16"	6"	12"	13"	4 1/2"	7 1/4"	12"	15"
15'-20'	19"	20"	3"	2 11/16"	5 3/16"	12"	12"	24"	6"	6"	4"	3 1/16"	6"	12"	13"	4 1/2"	7 1/4"	12"	15"

Guides are shown fastened with through Bolts. Expansion bolts are approved in many locations.



## Specifications for Rolling Steel Shutters and Doors

### COMMERCIAL SERVICE DOORS

### MOTOR DRIVEN DOORS

### FIRE DOORS

#### Scope.

1. The Commercial Service Doors, Motor Driven Doors, and Fire Doors, manufactured by Cornell Iron Works, Inc., will be built according to the following specifications, though the type of door desired only is specified.

#### General Condition.

2. The type, whether Commercial Service, Motor Driven or Fire Door, should be plainly indicated on the plans.

#### Labels.

3a. All fire doors shall bear the proper label of Underwriters' Laboratories, Inc., to give minimum fire insurance rate; or carry their certificate, if too large to label. (Note 8b.)

#### Location.

4. Doors shall be located on face of jambs, inside, unless otherwise shown. They shall give the full width and height of opening, in the clear, unless otherwise shown.

#### Curtain.

5. The curtain shall be built up of interlocking slats, of cold rolled open hearth steel or similar copper bearing steel,  $\frac{7}{8}$ " in depth at the crown, about  $3\frac{1}{2}$ " in width.

6. End locks shall be riveted to each end of alternate slats, with two galvanized, or tinned, rivets. They shall be made of malleable iron, or steel, at least  $\frac{3}{16}$ " thick. They shall prevent lateral motion of the slats and shall protect the slats against contact with the side guides, taking up all wear.

6b. Endlocks for fire wall, vertical shaft and partition doors, shall be continuous and shaped to shut off the passage of flame around the edges of the curtain in the guides. Continuous endlocks shall be shaped to nest into each other, as the curtain coils, and automatically preserve the alignment of the coil.

7. All slats shall be protected with a coating of pure zinc, evenly distributed before forming by the electro process, and shall stand two one-minute dips in a standard copper sulphate solution, known as the Preece test. The standard solution, furnished by Underwriters' Laboratories, Inc., shall be kept by the manufacturer in unbroken packages and he shall be prepared to take samples, and make tests in the presence of the architect's representative whenever called for.

Note A hot galvanizing, before forming, can be furnished without extra charge, but is not recommended.

Note A hot galvanizing, after forming, gives the heaviest possible zinc covering, but takes a small extra.

8. Standard U. S. No. 22 gauge shall be used for doors 15' 6" and less wide. No. 20 gauge, shall be used above this width up to 20' 0"; No. 18 gauge from 20' to 23' and No. 16 gauge for all doors wider than 23 feet when exposed to wind pressure.

8b. Underwriters' Laboratories requirements shall govern, unless wider than 15' 6", when No. 8 shall govern. Underwriters require:

Class A, Fire Wall doors, No. 16 gauge, labeled up to 80 sq. ft.

Class B and C, Partitions, etc., No. 20 gauge, labeled up to 80 sq. ft.

Class D, Exterior, No. 22 gauge, labeled up to 100 sq. ft.

9b. The depth, sections and construction of the guides shall be governed by the standards of Underwriters' Laboratories, Inc., For doors too large to carry labels the provisions of Section 9 shall be the minimum allowed.

#### Guides.

9. The curtain shall travel in side guides securely fastened to the building with  $\frac{3}{8}$ " expansion bolts for masonry,  $\frac{3}{8}$ " machine bolts for steel. Each guide shall consist of an outer heavy 3" Zee Bar, at least  $\frac{1}{4}$ " thick, and an inner angle at least  $\frac{3}{16}$ " thick, for doors up to 15' in width. An equally heavy construction shall be used for wider doors. The depth of the guides shall be in proportion of the width of the door, as follows: up to 15' 0" width, 3" deep and increasing  $\frac{1}{2}$ " in depth for each 5' 0" in width thereafter.

10. The guides shall set out from the wall, 2" or more, to compensate for the varying diameter of the coil and minimize the angle at which the curtain enters.

#### Shafts.

11. Shafts shall be made of heavy wrought iron, or steel, pipe, at least  $\frac{1}{4}$ " thick and of a diameter large enough to insure a maximum deflection of not more than .03 inch per foot of width.

11b. Underwriters' Laboratory requirements shall govern size of pipe for doors within labeling limits.

12. One or more helical steel springs shall be mounted on the inner shaft, of dimensions to exactly counterbalance the weight of the door at any point in its travel. The springs shall be made of oil-tempered wire with japan finish baked on. They shall be well greased before inserting in the pipe and shall be tested to 25% overload before leaving the shop.

#### Bearings.

13. All shaft bearings shall be of the oilless type, bushed with hard bronze, having graphite inserts to provide self-lubrication.

Motor driven shaft bearings shall in addition have provision for lubrication by high pressure grease gun with oilless bushings which will not be affected by grease or oil.

#### Brackets.

14. All brackets shall be of armor plate unbreakable construction, built up of rolled steel sections riveted together. The main bearing shall be of the self-lubricating oilless type. Each bracket shall be securely bolted to the heavy zee bar of the side guide, making a self-contained construction. At least one  $\frac{1}{2}$ " through bolt shall secure each bracket to the wall for doors over 100 sq. ft. in area.

14b. Brackets may be erected independently of the side guides and fastened by at least two  $\frac{1}{2}$ " through bolts in the wall.

15. One bracket shall be provided with a spring adjusting wheel, conveniently located on its outside face, for varying the torsion of the spring to suit the operator.



## Specifications--Continued

	COMMERCIAL SERVICE DOORS	MOTOR DRIVEN DOORS	FIRE DOORS
Wiring.		15a. The controls specified below shall be furnished, and erected where possible, by the manufacturer. All wiring shall be done by another contractor. The manufacturers shall furnish complete wiring diagrams.	
Operation. Control.	16. Doors up to 80 sq. ft. shall be self-coiling, operated by handles on the bottom bar, and provided with a pole and hook for doors over seven ft. high. Doors above 80 sq. ft. shall be operated by an endless hand chain, of $\frac{1}{8}$ " thickness links, galvanized or sherardized, actuating a sprocket and turning the shaft through a chain of gears. Geared doors located on the outside face of the wall shall be provided with a hand crank operator to work from either side of the wall, or a chain operator to work from the inside of building.	16a. Doors shall be operated by G-E electric motor of sufficient power to give a curtain travel of one foot per second. The motor shall be mounted on the gear bracket, direct connected and self-contained. An enclosed G-E, or Cutler Hammer, magnetic switch automatic starter, shall be furnished. A screw type limit switch shall be furnished, with each door, direct connected to the driving gears and arranged to automatically stop the curtain at the top and bottom of its travel, independently of any other control. 17a. <i>Switch Control.</i> —A Trumbull, or Square D, reversing knife switch shall be furnished for each door. <i>Push Button Control.</i> —Alternate. Push button stations, as shown on plans, with three buttons, each marked UP, STOP, DOWN, shall be furnished in connection with an enclosed type reversing magnetic switch, to control the movement of the curtain. Note: Push buttons and a reversing knife switch are alternate controls. The former are more expensive. Only one switch can be used per door, where each door can have several push button controls. 18a. An emergency hand chain operation shall be furnished with each door	16b. Class A, 16 gauge doors, up to 60 sq. ft., and Classes B, C and D doors up to 80 sq. ft., shall be self-coiling operated by handles on the bottom bar, and provided with a pole and hook for doors over seven feet high. Doors above these limits shall operate by hand chain through gearing, or by hand crank. All automatic closing fire doors, operated by either chain or crank, shall be so arranged that all gearing will automatically drop out of mesh upon fusing of the link. No gearing shall be left in mesh to turn backward upon closing of the door with the exception of one idler gear in the case of between jamb doors.
Gearing.	19. All gears shall be cast from machine cut, metal patterns and run on oilless, self-lubricating graphite and bronze bearings. All gears shall be placed on the outside face of the gear bracket to facilitate greasing and inspection. All gearing for exterior doors, placed on outside walls, shall be covered with a suitable cast iron, or galvanized sheet steel, cover.	19a. All gears shall be machine cut. No cast gears shall be used. The motor pinion shall mesh into a noiseless micarta, or bakelite, gear. Worm wheel shall be cast iron placed above the steel worm. Both gears shall be entirely enclosed, run in oil, with ball thrust bearings either end of worm. For doors over 400 sq. ft. the motor bracket shall be double, of open box construction, and all gearing shall be of the spur type.	19b. All gears shall be cast from machine cut metal patterns and run on oilless, self-lubricating graphite and bronze bearings. All gears shall be placed on the outside face of the gear bracket to facilitate greasing and inspection. All gearing for exterior doors, placed on outside walls, shall be covered with a suitable cast iron, or galvanized sheet steel, cover.
Electric Brake.		20b. A solenoid type electric brake shall be furnished, normally on, and locking the mechanism when the current is off.	
Hood.	21. The hood shall consist of 22-gauge galvanized sheet steel curved to fit the cylindrical coil of the door when the curtain is up. The hood shall be properly fastened to the brackets and the face of the lintel. The lower edge shall be reinforced with a $1\frac{1}{4}$ " diameter roll.		
Locks.	22. Self-coiling doors shall lock into the sides guides at the bottom with a sliding bolt either side. Chain-operated doors shall have a locking device for the chain riveted to the guide. Crank-operated doors shall have a device to lock the vertical shaft against rotation. Padlocks are not furnished by this contractor.		
Paint.	23. All material shall receive one coat of oxide and oil paint before leaving the shop.		
Guarantee.	24. All doors shall be guaranteed against defective material or workmanship for a period of one year after installation.		
Special.	25. An alternate extra price shall be made on using Cornell non-corroding curtain bottom, 12" or 18" up, for all exterior doors." Note—A special pamphlet describes this feature in detail.		
FIRE DOORS (CONTINUED)			
Automatic Device.	26b. Automatic devices shall be arranged to release and close the door upon the melting of an Underwriters Labeled fuse link. The door shall be arranged to operate normally independently of the automatic device. Automatic doors shall be furnished with a device to give a powerful starting force in closing. The contacts of the releasing device shall be formed with brass rollers. No sliding friction shall occur in releasing the spring power. All bearings of the automatic release and starter shall be oilless self-lubricating.		
Governors.	27b. Governors for uniform speed of closing shall be of the escapement type. Governors for retarded landing only may be of the centrifugal type. Doors where either type of governor is required are so indicated on the plans.		
Automatic Shutters.	28b. Paragraphs 26b and 27b are included: Shutters shall be arranged for testing from inside the building and resetting from the same point. All gearing and releasing mechanism shall be completely covered. All gearing shall automatically drop out of mesh upon release of the automatic.		
Baffle Plate.	29b. An automatic baffle plate flame stop shall be furnished inside the hood for all Class A, B and C Doors.		

Note.—Cornell Iron Works, Inc., will gladly furnish scale details for all types of doors, so that the mechanical necessities may be fitted to the architectural treatment.



# A Partial List of Customers

## ARCHITECTS AND ENGINEERS

Carrere & Hastings  
Irwin T. Catherine  
Densmore, LeClear & Robbins  
Ralph Harrington Doane  
Fay, Spofford & Thorndyke  
Thomas W. Lamb

Lockwood Greene & Co.  
Charles T. Main  
McKim, Mead & White  
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Parsons, Klapp, Brinckerhoff & Douglas  
Sanderson & Porter

Stone & Webster  
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## CONTRACTORS

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Chase & Gilbert  
Consolidated Eng. Co.  
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## RAILROADS

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Boston & Maine  
D. L. & W. R. R.  
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Erie R. R.  
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L. & N. R'way  
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Pere Marquette R. R.  
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Santa Fe R. R.

## PUBLIC SERVICE CORPORATIONS

City of Cleveland  
W. S. Barstow M'g'nt Asso.  
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Interboro Rapid Transit Co.  
Iowa Rwy. & Light Co.

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New England Tel. & Tel. Co.  
N. Y. Edison Co.  
Panama Electric Co.  
Penn. Edison Co.

Phoenix Utility Co.  
Public Service Co. of N. J.  
Terre Haute, Ind. & Eastern Traction Co.

## MISCELLANEOUS

Amer. Rwy. Express Co.  
Atlantic & Pacific Co.  
Clyde Line  
Wm. R. Grace & Co.

Eastern S. S. Co.  
Madison Square Garden  
Mallory S. S. Co.  
Sesqui Centennial Buildings.

United Fruit Co.  
U. S. Army  
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American Smelting & Refining Co.  
Amer. Tobacco Co.  
American Woolen Co.  
Armour & Co.  
Arrowhead Springs Corp.  
Cudahy Packing Co.  
Eastman Kodak Co.  
Ford Motor Co.

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General Motors Co.  
International Harvester Co.  
Kirkman & Sons  
McClintic Marshall Co.  
Mexican Petroleum Co.  
National Biscuit Co.  
Otis Elevator Co.  
Pillsbury Flour Mills

Standard Oil Co.  
Swift & Co.  
Tiffany & Co.  
U. S. Steel Corp.  
Ward Baking Co.  
F. W. Woolworth Co.  
Youngstown Sheet & Tube Co.

*Cornell Rolling Steel Doors are in service in nearly every  
large city in the United States—Ask for nearby installations*







